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# THE FUNDAMENTALS OF ACCOUNTING

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HOUGHTON MIFFLIN COMPANY

BOSTON • NEW YORK • CHICAGO • DALLAS • SAN FRANCISCO

*The Riverside Press Cambridge*

HF5635  
C67

Replacing no. 457 663

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The Riverside Press  
CAMBRIDGE, MASSACHUSETTS  
PRINTED IN THE U. S. A

## PREFACE

THE most striking development in the educational field of late is the rush of students to the commercial departments of our secondary schools and our colleges. Whatever else is or is not taught in such departments, accounting (in the colleges) or bookkeeping (in the secondary schools) is taught. All over the country, moreover, correspondence schools and evening schools are teaching accounting. Thousands of students of accounting are graduated from one or another kind of school every year, and yet professional accountants are constantly calling for good men and cannot get them. This is not because the demand is tremendous, for the number of practicing accountants in the country is not large, but because the supply is small. Comparatively few who study accounting prove competent for responsible positions.

Accounting requires a certain type of native mental capacity, as well as a certain amount of training. That type of native capacity happens to be rare. Two essentials for accounting, as distinguished from bookkeeping, are a highly developed analytical faculty and a good imagination. The first is rare at best, and it does not commonly go along with the second. It is futile to try to produce accountants from material that is lacking in either faculty. Any teacher of the subject should understand at the start that of the many who fancy themselves called few will ever be chosen. Yet though few can ever be accountants, every person charged with executive responsibility should know the fundamentals of accounting, for he cannot understand the reports of his own business (if he has a good accountant) unless he knows what the accountant is talking about, and he cannot direct even elementary accounting (if he has not a good accountant) unless he knows what constitutes good accounting. Every student of public affairs, moreover, should be able to interpret financial reports, both public and private, and know what business facts lie behind them. The study of accounting, therefore, is not futile even for those who cannot be accountants.

A result of the rush of college students to commercial studies,

and away from the humanities, is alarm on the part of college authorities regarding the mental training that under the new régime their students will get. However regrettable may be the neglect of the humanities, because of the limitation of the field to which the new studies largely confine themselves, there need be no loss of mental training. As philosophy and mathematics are disciplinary studies, and in the old program are desired not only for their content, but for their disciplinary value, in the new program accounting may, so far as discipline is concerned, take their place. It is a compound of philosophy and mathematics — that is, the only method of teaching it that makes either successful accountants or successful interpreters of accounts is the method of teaching philosophy and mathematics. Accounting must proceed by reasoning, not by rule: it is not a body of arbitrary facts, true merely because they are true, and therefore to be memorized: it is a body of plain common sense, developed out of hard thinking about facts that have been, and imagination to see what future need will arise for record to-day of facts that are. It calls for mental activity of the highest type: it is not *virginibus puerisque*.

Yet its value both as a disciplinary study and as vocational training depends wholly upon the method of instruction. No one will ever use accounts successfully who is not able to think in abstract terms about them, for like mathematical terms and philosophical concepts they are to great extent abstractions — except the simple bookkeeping items of cash, accounts receivable, etc. One reason, moreover, why, with thousands of students graduating in accounting annually, professional accountants are not able to get good men is that so much of the work of the students has been of the memorizing rather than the reasoning variety. The students have taken accounting as if it were a body of scientific facts to be memorized rather than a philosophy of accounting conduct.

The method of this book is the philosophical. It starts with the simplest obvious fact needing record, property and ownership, and from this develops the need of particular accounts. Not for several chapters is any need found for the always confusing nominal accounts, and then they develop naturally after the statistical need for them has arisen. The technique of bookkeeping does not appear until the ninth chapter, and then it results from a



need of labor-saving devices. This technique is dwelt upon only enough to show the feasibility of most of the information that the accountant desires. Indeed, though bookkeeping is the tool of accounting, it is a tool so simple in principle that to ask any one who does not intend to be either a bookkeeper or a professional accountant to spend many months in studying it is almost an educational crime. Indeed, the whole method of procedure is based on the fact that nothing is of interest until some need of it, or curiosity about it, is felt.

Though the book deals with fundamentals, it is not superficial; for fundamentals are always the contrary of superficialities. As far as it goes, it is complete. It does not avoid a matter because it chances to be abstract or difficult: if it did, it would have neither disciplinary nor practical value. It attempts to give all the fundamental considerations of accounting. What more there is to accounting is the application of these principles to situations in which careful analysis, based on detailed knowledge of the particular business, has found a way of application, sometimes through a maze of complexity of business relations.

On the part of the senior author, the selection of material and the method of exposition follow twenty years of University experience in teaching accounting. The junior author, on the other hand, who has but recently been a student of accounting, under methods of instruction similar to those incorporated here, and of late has been assisting the senior both in some of his teaching and in the practice of accounting, brings to the collaboration the combined point of view of the student, the young instructor, and the practitioner.

To give concreteness to the principles worked out here, appended to every chapter are questions and problems which test the reader's ability to apply his principles. These are intended not for repetitious drill, but as illustrations of how the principles apply to concrete facts. If any one wishes drill, he can easily make additional problems for himself. Those given afford large variety.

W. M. C.

A. E. G.

CAMBRIDGE, MASSACHUSETTS

*November 22, 1920*





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# THE FUNDAMENTALS OF ACCOUNTING

## CHAPTER I INTRODUCTION

**An Accountant like an Editor.** The accountant may be compared in some respects to the editor of a newspaper or a magazine. The business man requires to be constantly informed about the conditions and operations of his business, just as he requires to be informed of the conditions and operations of the business world with which he has dealings. It is, indeed, more immediately important that he shall know just how things are going on within his own business than it is that he shall know how things are going on outside, for since his own business is under his direct control, he is responsible for its guidance day by day, whereas adjustment to the outside business world with which he has necessary dealings is often a matter of weeks or months — never too soon begun, but less serious if an error is made, for more time is available for correction. However well informed he may be about people's demand for goods or for services, unless he is conducting his own business in such a way that he can provide goods or services when wanted, he is failing to conduct business successfully. It is important, therefore, that a business man shall be informed with frequency about his own business, and that this information shall cover a large variety of facts, such as his stock of goods on hand, the cost of that stock of goods (whether purchased or manufactured), the expenses of conducting his business (so subdivided that he can know whether his expenses in any particular direction are running higher than formerly or are out of relation to the amount of business done), the amount of indebtedness he has soon to pay, the amount of money coming in and soon to be available for paying debts, the amount of cash in hand, the amount of investment in his business, the profits which he is making, and the availability of those profits for withdrawal.

**What the Accountant Edits.** Just as the editor must get into the hands of the public at frequent intervals information with regard to the news of the world or with regard to some special field of activity or learning, so the accountant must get into the hands of the business man at reasonably frequent intervals such information as has been enumerated. Usually there are several persons in the employ of a business whose task is in part to prepare information for the general manager, but usually such information is either not in the particular shape most useful for the manager or is not so correlated with other information as to bring out the larger facts that the manager needs to know. It is the task of the accountant to put the information in the desired shape and to correlate various kinds of information, or, as we commonly say, "edit" the information. Because the accountant must prepare information for the general manager or other officer, he usually occupies a more or less confidential position, and often is a vice-president of a corporation. He must have the knack of preparing information in shape for use by others, he must have sufficient imagination to see what sort of information the various officials will desire, and he must have sufficient power of analysis to see how to get the sort of information that will enable the operating officers of the business to tie up the various parts of the business with each other and with the outside business world — and he should provide them with such information even if they have not realized the need of such particular information. It is his task, in a sense, to foresee what information about the business will be later required and to see that such information will be available at the proper time. He must anticipate the need for information, so that he may have his lines laid before the occurrence of the event, for the procurement of that information as soon as the event happens. This is just the task of the editor of a newspaper or a magazine, for he not only tells people what they already wish to know, but he gives them what they are glad to know, though they had not previously known that they needed to know it.

**Many Kinds of Accounting.** Just as there are various types of editors, some of them preparing daily news for the general public, some preparing literary articles for those who are interested in literary matters, some who are preparing technical matters for the



technical public, so there are various types of accountants who are preparing information for various types of business managers. Rarely an accountant is also the bookkeeper, and has prepared the preliminary figures as well as edited those figures and provided the editorial matter to correlate them properly for the manager. More often the accountant does not prepare original figures, but merely edits the figures of other people, combining them in various ways and drawing from them important conclusions that only a trained person could see. Many of the figures are statistical, not expressed in dollars and cents, but are quite as important as financial figures. The matters of accounting are almost as various and different in nature as the matters which are published in newspapers and magazines. It would be virtually impossible for any man to prepare himself to edit all kinds of newspapers and magazines, for some of them are extremely technical and a man must be an expert in certain lines of knowledge before he can edit a newspaper in those technical lines. Similarly, a man is not competent to edit the records of a highly technical business, like those of a chemical works, until he is familiar with the processes of the chemical plant and until he has made a study of the accounting problems connected with certain technical operations.

**Limitations of Accountants.** No effort is made in this book to take up more than a few of the technical matters of accounting, and such matters are far more numerous than the person of limited acquaintance with accounts would usually suppose. The peculiar and technical matters of accounting are not merely those made necessary by the peculiarities of certain industries: they are often common to all industries, but peculiar to certain relations of business, such as peculiar partnership arrangements, peculiar corporation organization, settlement of bankruptcies, purchase and sale of rights where a long period elapses between the purchase and the delivery, and agreements in which various contingencies are involved. All these matters need peculiar kinds of records in order that at any time during the history of the transaction or later one may see how the various persons concerned in the transaction were financially related to it. In an elementary book it is undesirable to take up complicated relations, for no one is competent to understand them and to make or control the record of them unless



he is thoroughly familiar by experience with the record-making for more or less simple transactions — else the records which he may make will confuse the complicated sort of transaction with the transaction which is of a more simple sort, and it will be impossible from the record to interpret the actual facts of the case. Unfortunately a great many persons who have familiarized themselves with the fundamentals of accounts have thought that they had mastered the whole subject and have undertaken to make record of transactions which they did not at all understand; and later, when a dispute has arisen regarding the transactions, the records have proved inadequate and have often led to wrong settlement merely because the person who made the record pretended to be more competent than he was. It is quite as important that a person studying accounts know what he does not understand, and thus know what to avoid, as it is that he shall know how to do those things which he is quite sure that he understands. Just as one may know a great deal of law and yet be incompetent, and know one's self to be incompetent, in certain complicated and weighty matters of law, so a person who knows much of accounting can sometimes give best proof of his knowledge by indicating frankly what he is not competent to do.

**Relation between Accounting and Bookkeeping.** It has been suggested that the accountant is like the editor in that he does not usually provide the original figures on which he bases any report. This is because the accountant is not usually, except by chance, a mere bookkeeper; though, like the editor, he often directs what sort of thing shall be written and how it shall be written. The task of the bookkeeper is to record known facts, and these facts may be known because they are very simple and of an obvious sort, or they may be known because an accountant or some one else has analyzed a business transaction and has told the bookkeeper exactly what is the situation to be recorded. The task of the bookkeeper, though important, does not ordinarily involve a very keen analysis of a business situation. The processes of bookkeeping, though requiring intelligence, very great accuracy, and general good common sense, are chiefly those of routine. When need arises for analysis of a complex situation, or for statement of a complex situation so that the record will be perfectly clear not only in itself but in rela-

tion to other elements of a business, decision is usually made by an accountant who has had training in both the larger aspects of figures and the significance of business relations. The task of the accountant may be described generally as that of analysis and correlation of various figures so that the important facts about a business, both the details and the larger meanings, may appear in their proper light and emphasis. Perhaps the best way to indicate his duty is by the common figurative illustration of the distinction between seeing the forest and seeing the trees. The bookkeeper is bound to see the individual tree, as he makes his record, for that is his job; but often he does not realize what is the general appearance of the forest as a whole, the relation of the various kinds of trees in the forest to one another, and what is the relation of the forest as a whole not only to the pastures and the fields and the cultivated portions of the country in which it lies, but also to the hills, the valleys, and the plains. It is the duty of the accountant to see the forest in all its surroundings as well as in itself, and he is not much concerned with the individual trees.

**Dependence on Bookkeeping.** Yet the accountant could not do his work without the bookkeeper, and the language which he speaks is in part the language of bookkeeping. He must, indeed, understand bookkeeping before he can be an accountant. In fact, an accountant usually is required to be a better bookkeeper than most bookkeepers, for he is obliged to untangle situations which have been unfortunately recorded on the books, and he often must direct the bookkeeping to serve his ends. This, on the other hand, does not necessarily mean that he must be an expert in the technique of all sorts of bookkeeping, for bookkeeping as a matter of fact involves but very few principles. Though there are thousands of bookkeeping forms all good in their way, an accountant does not need to be familiar with them all, for they are all based on a few fundamental principles, and a person who understands those principles thoroughly is able to see how they have been applied to the various forms of books that he may come upon. Variations in the form of books are due almost entirely to the modern attempt to apply labor-saving devices, and since the circumstances of almost every business are somewhat different from those of other businesses, the application of labor-saving devices in each will differ in



detail from the application in others. A careful examination will enable any one familiar with the fundamental principles to learn from any set of books exactly how the system is working, and he is therefore just as competent to interpret those books and to pass judgment upon them as if he had made a previous special study of that particular form and had had the person who devised the system tell him how it is intended to work. Since an understanding of all bookkeeping principles is essential to an accountant's work, in the following pages the fundamental principles of bookkeeping will be first discussed, and then a study of the general application of labor-saving devices to those fundamental principles will follow. Virtually nothing further will be said about bookkeeping forms.

**Accounting for Non-Accountants.** In the early part of this introduction emphasis was laid upon the necessity of an accountant's editing the figures which are to be presented to a general manager, but it should be just as clearly understood that a business man as well as an accountant should have a certain familiarity with the interpretation of an accountant's figures, for there is not uniform practice with regard to the statement of such figures, and a man often finds it necessary to interpret the figures of other businesses where the forms of statement not only are entirely unlike his own but are in fact unfortunately chosen. Any man in an executive position in a business, whether he has anything directly to do with accounts or not, and any man having dealings with general business, as an investor or a student of public affairs, needs a certain familiarity with accounting procedure and statements, so that he may judge how business affairs, both public and private, are being conducted. Attention is devoted in this book, therefore, as much to the interpretation of accounts as to their construction.

## CHAPTER II

### DOUBLE ENTRY AND THE BALANCE SHEET

**Basis of Double Entry.** The basis of double entry is a realization that in modern business there are no assets lying about without claimants. To everything having value some one is a claimant. If in a business there is any property, or any right, or any intangible quality that brings value, like a reputation that draws trade, some one claims that property or right or quality. If one is to have a statement of a business at any particular time, therefore, one will need to know exactly what property, rights, and qualities are in the business and who may claim those particular elements which go to make up the business as a whole. We must distinguish, moreover, one kind of asset from another, for otherwise every time we contemplate a particular transaction we might need to visit some part of the establishment to learn whether that transaction is possible for the business as it now stands — we cannot ordinarily pay debts with equipment, nor sell merchandise if we have only raw material, nor pay dividends if we have only stocks and bonds. Similarly we must distinguish one kind of claims to the assets from other kinds of claims, for different claims are enforceable in different ways and may be met at different times. Since, however, as already indicated, all values are claimed by some one, it must follow that the total values attached to the list of assets must equal the total claims which are established against the business by persons, including the proprietors, whose claims are recognized by it. So even the simplest statement that can be drawn up for a business must be “in balance” — i.e., the asset side will exactly equal or balance what we may call the “ownership-claim” side. Equality is always there, for if any value is in the business it must belong to some one, and that ownership must be recorded both on the books and on such a statement. There is no way by which total assets can increase without a parallel increase in claims to assets; there is no way by which total assets can decrease without a parallel decrease in claims to assets; there is no way by which total claims to assets can increase without a parallel increase in assets to be

claimed; and there is no way by which total claims to assets can decrease without a parallel decrease in the assets to be claimed. Anything else would mean either that there were some unclaimed assets, or that some one had a claim to property which did not exist. Either is absurd. The assets determine (fix a limit to) the ownership-claims. This does not mean, of course, that a person may not present a claim for property when there is not property enough to satisfy his claim, as in the case of a bankruptcy, and often a person claims property which some one else at the same time claims. In such cases some of the claims are not enforceable or real claims, and it is either the task of a bookkeeper to show the reduction of claims to match the assets, or the task of a lawyer or a judge to settle the rival claims.

**Balance Sheet.** A simple illustration of such a statement, which is commonly called a "balance sheet," is attached below. It is customary in America for all assets to appear on the left side of such a statement — ownership-claims at the right.

<i>Assets</i>		<i>Ownership-claims</i>	
Real Estate	\$50,000	Proprietor	\$92,000
Fixtures	2,000	Accounts Payable	45,000
Accounts Receivable	55,000		
Merchandise	25,000		
Cash	5,000		
	<u>\$137,000</u>		<u>\$137,000</u>

**Assets.** All items on the assets side above except accounts receivable represent assets which can be valued or counted by observation. Accounts receivable does not represent tangible property in the ordinary sense, but represents claims of this business against outside people for merchandise purchased from the business in some past period. These may be reported either individually by name, or in a group as above. The statement is not a complete balance sheet unless it covers all the items of value belonging to the business.

**Ownership-Claims.** Even though the business is owned by one man, the proprietor, he is not necessarily the owner of all the property shown on the left-hand side of the statement; for usually a man conducts business with other capital than his own. In that case, though the people who have lent him money cannot without special



legal provision step in and carry off any of the assets on the ground that a part of the business belongs to them, it is nevertheless true that they have a claim against those assets independent of the proprietor's ownership. In order to indicate the fact that a proprietor is not the sole and unhampered owner of the property on the left-hand side of the sheet, it is necessary either to show the names of other people who have claims against the property, or to show the total claim of all such persons, in a group or in several groups according to the nature of their claims, and this must be done for two reasons — first, to show how much of the ownership actually belongs to the proprietor, and, second, to show how much of the assets must sooner or later be turned over to the creditors of the business in order to satisfy their claims. In the case of the balance sheet above, the accounts payable, being just the reverse of the accounts receivable on the other side, represents sums payable by the business to outsiders who have furnished merchandise. It may, indeed, happen that these outsiders cannot immediately claim payment of the sums which are owed them: it may be that the merchandise was bought under terms of credit — specifically, that the debts must be paid in ten, or thirty, or sixty days. Only through legal process can the holders of the accounts payable force a distribution of the assets to them if the proprietor withholds payment.

**Temporary Validity of Balance Sheet.** An important thing to note about a balance sheet is that it will normally hold true for only a very brief moment of time. If the business is continuing, the very first hour of the next day it is probable that something will happen to change some of the figures given here. If any payment of debt is made, cash will be less than before, and accounts payable will be less than before. If any merchandise is sold, the merchandise will be less and the accounts receivable will be more, or the cash will be more; and if, as is of course usual, merchandise is sold at a profit, the new figure of cash or accounts receivable will be larger than the figure for the merchandise surrendered for it. In other words, the change in the character of the assets from merchandise to accounts receivable or cash brings not an exact equivalent in exchange, but in addition a new or excess asset, arising from profit, and that profit in turn constitutes increased proprietorship or ownership-claim.

**Balance Sheet always in Balance.** Our next fundamental matter to note about accounts is that, just as our balance sheet showed assets and what we may call ownership-claims to be equal, no change that can later occur in any part of the business or from any cause can destroy that equality — and it existed from the beginning of the business. It is inherent in the constitution of business. Let us examine this.

**Kinds of Changes in Assets.** There are four and only four types of sources from which a business can get assets:

- (1) Investment by the owner of the business
- (2) Loans made to the business
- (3) Exchanging an old asset for a new
- (4) Profit accruing to the business

This is one of the axiomatic, common-sense things that one must see early in his study of accounting. Obviously an asset must come either from inside the business or from outside — for there are no other places: if the new asset comes from outside the business, it must come either from an owner of the business or from one who is not an owner, for there are no others; if it comes from an owner, the case is that of the first type listed above (investment); if from one who is not an owner, the case is of the second type (loan to the business); if it comes from inside the business, it must come either from what was there before or from what was not there before; if the new asset is derived from an asset that was in the business before, it comes by exchange, which is the third type named above; if it comes from inside the business but from something not there before, it must have been created inside and is of the fourth type (and that is just what we mean by profits). This gives us our four sources. Similarly there are only four causes of reduction of assets: (1) withdrawal of investment by an owner of the business, (2) repayment to a lender, (3) giving one asset in exchange for another, and (4) loss suffered by the business. The interesting thing about these four sources of assets, and about these contrary causes of reduction of assets, is that any proper accounting must not only record them, but record them as distinct from each other. We must distinguish proprietor's claim from lender's claim, of course, for the proprietor is entitled to all growth in assets (as well as required to suffer, if possible, all shrinkage), whereas the lender has a



claim for a fixed sum only. We must distinguish the amount of the proprietor's investment from the amount of his profits, of course, for otherwise he will not know how he is prospering. We have already seen that we must distinguish one kind of asset from another.

**Two Aspects of Changes — Assets.** We saw some time ago that the existence of assets must be shown on the records, each kind separately, and we have now just seen that all sources of assets and all causes of reduction in assets must also be shown on the records. If we have more cash, for example, we need to record not only the change in the cash, but also the fact that the proprietor invested it, or that a profitable transaction yielded it, or that some one lent it, or that we exchanged some other asset for it. The reverse is true, of course, of the disappearance of assets. We find, then, that (with the exception of exchange of one asset for another of the same kind, as a ten dollar bill for two fives, or one article of merchandise for another) a change in any asset, whether increase or decrease, must be recorded in double aspect — the effect of the change, in the record of the asset itself, and the reason for the change, in the record of the thing which brought about or coöperated in that change.

**Two Aspects of Changes — Ownership-Claims.** Approaching these changes from the ownership-claim end, too, we find the same necessity for the double-aspect record. A lender cannot lend without lending something; and hence it is inconceivable that we should record a person as a lender without also recording the thing that he lent. The same is true of investment by the proprietor: he cannot invest without investing something; and that something must be recorded as an asset quite as much as the fact of his investment must be recorded in connection with his name. Lastly, even profit and loss are inconceivable except in a double aspect: no man can be richer without being richer in something; if he has not more cash, or more merchandise, or more collectible accounts, or more other property, or fewer debts, he is not richer; if you can record more worth in connection with his name, you can record either more assets or fewer debts. If his profit lies in the fact that he has fewer debts, one ownership-claim (his) has been substituted for another (the creditor's), and the change in each needs record. For proprietorship withdrawals of investment, for payments to lenders, and

for losses, of course, the same principle is true — if the claims are reduced, the assets which were used to pay them are also reduced. Just as we find, then, that it is impossible to have an asset affected without an effect on the proprietor's record, or the profit and loss record, or a lender's record, or the record of some other asset, so we find that it is impossible to affect the proprietor's record, or any other ownership-claim record, without an effect on an asset record (except, of course, in case of an exchange of ownership-claims, as a substitution of one claim for another — not changing the total of ownership-claims, and so not changing the assets to which they are claims).

**Balance in all Transactions.** In other words, we have seen that just as a balance sheet must always be in balance, with equality of assets and ownership-claims, the record of subsequent transactions, whether they are large or small, of whatever sort, must continue that equality — not only all in all and in the long run, but for each transaction individually, for we have found this principle true of all possible transactions. This may be tabulated so as to show for every possible change the four possible sources or causes which require record as much as do the changes first named.

- (1) Increase of asset — from proprietor, from profitable transactions, from borrowing, from exchange
- (2) Giving up of asset — to the proprietor, in unprofitable transactions, to lenders, in exchange
- (3) Increase of ownership-claim — through investment by proprietor, making a profit, borrowing, exchange
- (4) Decrease of ownership-claim — through withdrawal by proprietor, losing, paying a lender, giving in exchange

It will be observed that (except for the exchange items which apply only within a group) whatever is (1) above is also (3), and must be recorded in both aspects; and whatever is (2) is also (4), and must so be recorded. This is the essence of double entry. Every entry has an "other half," which gives the other aspect of the same transaction.

**Assets Determining Ownership-Claims.** The conditioning element is the assets, for they are real and determine the ownership-claims (for there can be no claim to what does not exist). Since there can be no increase in ownership-claims without an increase in



assets, there must be no record of increase of ownership unless there is at the same time a record of increase of assets, and conversely there must be no record of decrease of ownership unless there is at the same time decrease of assets (for if the assets are there the ownership is there). To say, however, that increase of ownership means increase of assets, and decrease of ownership means decrease of assets, is not to say that entry to ownership provides or destroys assets, but is to say that such entry must never be made unless the correlative thing has happened — and the entry on proper books is to show that it has happened. But an entry increasing certain specific ownership-claims may be made without increase in assets, for it may go along with a decrease in other ownership-claims — which leaves total ownership-claims unchanged.

**Balance-Sheet Illustrations.** This may well be illustrated by a series of successive balance sheets, supposing that we draw up a new balance sheet after each transaction.

Suppose you and I begin business as equal partners with \$10,000 in cash. Then our balance sheet stands as follows:

1.	Cash	<u>\$10,000</u>	Proprietorship-claim	<u>\$10,000</u>
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This is the simplest possible type of balance sheet — a single asset and a single ownership-claim to complete the record of it — the two aspects of the same fact.

Then suppose we buy office furniture with part of our cash.

2.	Cash	\$9,000	Proprietorship-claim	\$10,000
	Office Furniture	<u>1,000</u>		
		<u>\$10,000</u>		<u>\$10,000</u>

This merely substitutes a new asset for a part of the old — an exchange of asset without a change in total assets, and therefore without a change in ownership-claim; but, like all other transactions, it involves two changes (in this case an increase of one account and a decrease of another).

Now we buy \$5,000 of merchandise “on account.”

3.	Cash	\$9,000	Proprietorship-claim	\$10,000
	Office Furniture	1,000	Accounts Payable claim	5,000
	Merchandise	<u>5,000</u>		
		<u>\$15,000</u>		<u>\$15,000</u>

This adds two new elements — a new asset without exchange of the old, and a new ownership-claim; and it must have both of these if either, for the new asset must have an owner somewhere.<sup>1</sup>

Now we give our promissory notes for \$2,000 to some of our creditors, as a way of acknowledging formally, through negotiable instruments, our debt for the merchandise.

4. Cash	\$9,000	Proprietorship-claim	\$10,000
Office Furniture	1,000	Accounts Payable claim	3,000
Merchandise	5,000	Notes Payable claim	2,000
	<u>\$15,000</u>		<u>\$15,000</u>

This substitutes a new ownership-claim for an old — a claim indicated by notes for a claim indicated by a “book account.” This illustration may further exemplify changes in ownership-claim if we suppose an intermediate step to be taken: the proprietor, instead of giving promissory notes to his creditors, as assumed above, may give his notes to a bank in exchange for cash and give the cash to his creditors. If he were to do so, the balance sheet would be just the same as that given above. In that case, however, the three ownership-claims shown would stand not only for three kinds of ownership-claims, but for three separate groups of people holding those claims. In either case, however, the fourth balance sheet as compared with the third shows no change in total assets, and no change in total ownership-claims; but it does show a change in the distribution of ownership-claims; and it involves two changes — an increase in one account and a decrease in another.

Now we sell merchandise, that cost us \$3,000, for \$4,000 in cash, reducing our merchandise by \$3,000, increasing our cash by \$4,000, and showing a new proprietorship profit-claim.

5. Cash	\$13,000	Proprietorship (investment)	\$10,000
Office Furniture	1,000	Accounts Payable	3,000
Merchandise	2,000	Notes Payable	2,000
		Proprietorship (profit)	1,000
	<u>\$16,000</u>		<u>\$16,000</u>

This gives us a quadruple change: an exchange of one type of asset

<sup>1</sup> It will be remembered that the creditor has no legal claim to these specific assets (except under certain legal conditions), but he has a newly established claim to some assets of the business (which particular assets will be determined by later developments).

for another (merchandise for cash — which alone would not affect the total of either assets or ownership-claims); and an increase of total assets — for cash was received in excess of the cost of the merchandise; and this, in turn, involves an increase in ownership-claim — profit added to proprietorship, but shown separately. Only three changes appear on the balance sheet, but that in cash is really double, for \$3,000 of the increase in cash is from the exchange of the merchandise and \$1,000 is from profit.

Next we use part of our cash to pay our notes payable.

6.	Cash	\$11,000	Proprietorship (investment)	\$10,000
	Office Furniture	1,000	Accounts Payable	3,000
	Merchandise	2,000	Proprietorship (profit)	1,000
		<u>\$14,000</u>		<u>\$14,000</u>

This gives a new type — the reduction of both assets and ownership-claims; and of course they must go together, for if assets have gone without replacement by other assets, ownership has disappeared also.

Now we will suppose that a change of style in merchandise forces us to sell our remaining merchandise for \$500 in cash.

7.	Cash	\$11,500	Proprietorship <sup>1</sup>	\$9,500
	Office Furniture	1,000	Accounts Payable	3,000
		<u>\$12,500</u>		<u>\$12,500</u>

This also gives a reduction in assets, but here, though of course the disappearance of assets is accompanied by a reduction of ownership-claims, the reduction of ownership results not from the payment of claims, but from the annihilation of them. Business conditions have destroyed \$1,500 worth of value, and hence have destroyed not only what was previously proprietors' gain, but also \$500 of the original investment. Cash has increased, to be sure, but merchandise has been reduced by much more than an equivalent. This gives four changes — \$1,500 decrease of assets, shown in two accounts, and \$1,500 decrease of ownership-claims, shown in two accounts.

Lastly, you withdraw from the business, taking in cash your

<sup>1</sup> For reasons to be given later, this consolidation of investment and profit into one item, for the purpose of registering a loss, would not in practice be usually desirable, but for the purpose of illustration here it is unobjectionable.



share, but I continue alone. The balance sheet of the business will then appear as follows:

8. Cash	\$6,750	Proprietorship	\$4,750
Office Furniture	1,000	Accounts Payable	3,000
	<u>\$7,750</u>		<u>\$7,750</u>

This last case gives us again a reduction in assets, and in proprietorship, but here is no loss of value. One of the proprietors as an individual has received what the business has given up.

**All Types of Changes.** These eight changes are typical of all the changes that can occur in business, as indicated on page 12. To put them in tabular form:

Individual assets increased from:

Proprietors' investment  
Profitable transactions  
Borrowing  
Exchange of assets

See balance sheet:

#1  
#5  
#3  
#2 (office furniture)

Individual assets reduced by:

Withdrawal by proprietor  
Unprofitable transactions  
Payment to lenders  
Exchange

See balance sheet:

#8  
#7  
#6  
#2 (cash)

Individual ownership-claims increased by:

Investment  
Profit  
Lending (lending to, borrowing by, the business)  
Exchange

See balance sheet:

#1  
#5  
#3  
#4 (notes payable)

Individual ownership-claims decreased by:

Withdrawal of investment  
Loss  
Payment of debt  
Exchange

See balance sheet:

#8  
#7  
#6  
#4 (accounts payable)

**Double Aspect.** It has been noted in the table above, of course, that each balance sheet is named twice. This is because every transaction has a double aspect, and hence no balance sheet can ever record one change only — one change on a balance sheet would show what assets had increased or decreased, but would not show whose assets they were or where they came from, or it would show who had more or fewer claims, but would not show how those claims came about or how they happened to be cancelled; and double entry gives both aspects of every transac-



tion. The illustrations above may now be tabulated completely as follows:

<i>Sheet</i>	<i>Assets</i>	<i>Ownership-claims</i>
# 1	Increased from	Increased (proprietors' investment)
# 2	One increased, one decreased	.....
# 3	Increased from	Increased (payables)
# 4	.....	One increased, one decreased
# 5	{ One increased, one decreased	.....
	{ Increased from	Increased (proprietors' profit)
# 6	Decreased by	Decreased (payables)
# 7	{ One increased, one decreased	.....
	{ Decreased by	Decreased (proprietors' loss)
# 8	Decreased by	Decreased (proprietors' investment)

**Summary of Entries.** These may still further be summarized, this time by ultimate nature, as follows:

- (a) When total assets are increased,  
total ownership-claims are increased (1, 3, 5)
- (b) When total assets are decreased,  
total ownership-claims are decreased (6, 7, 8)
- (c) When individual assets are increased but not total assets,  
some other assets are decreased, and total ownership-claims  
are not affected (2)

*Conversely*

- (d) When total ownership-claims are increased,  
total assets are increased (1, 3, 5)
- (e) When total ownership-claims are decreased,  
total assets are decreased (6, 7, 8)
- (f) When individual ownership-claims are increased, but not the  
total,  
some other ownership-claims are decreased, and total assets  
are not affected (4)

One more boiling-down of these items is worth while:

An increase in any asset is always accompanied by (because only so can it be explained) an increase in some ownership-claim (1, 3, 5) or a decrease in some other asset (2)

A decrease in any asset is always accompanied by (because only so can it be explained) a decrease in some ownership-claim (6, 7, 8) or an increase in some other asset (2)

An increase in any ownership-claim is always accompanied by (because only so can it be explained) an increase in some asset (1, 3, 5) or a decrease in some other ownership-claim (4)

A decrease in any ownership-claim is always accompanied by (because only so can it be explained) a decrease in some asset (6, 7, 8) or an increase in some other ownership-claim (4)

**Entries True of any Business Organization.** Though the illustrations of double entry as given here are confined to a business having individual proprietorship, the same thing will be true though the business be owned by many partners or by a corporation. The names of the various accounts representing proprietorship will be different, but the same principles will apply, as will be seen later.

**Business as an Entity.** There is another general approach to the method of double entry, substituting for the idea of constantly changing proprietorship, with each gain or loss, the idea of the business as an entity independent of its owners. Thinking of the business as owned by an individual, by partners, or by an organization of shareholders, on one hand, and thinking of it as an entity, independent of the owners, on the other, give the same handling of the accounts. When the business is treated as an entity, the accounts of the proprietor, of the partners, of the stockholders, represent in a sense liabilities of the business to the owners at the beginning of any period as if owners were outsiders; and then any changes in the net value of the business as a whole are carried in accounts representing increase or decrease in net value during that period as if the business had no owner, or were an independent entity. When the earning period is closed, however, the entity of the business has a settlement with the owners, and the profits and losses are carried to the accounts of the owners, to whom the business is liable. In a sense, therefore, when the business is treated as an entity it may be said to make a fresh start at the beginning of every financial period, and then the owners, so far as the books are concerned, stand "hands off" during that period; but at the close of the period the results of the period's business are entered in the accounts of the owners once more, and again the business as an entity makes a fresh start.

### QUESTIONS AND PROBLEMS

1. Is it possible to tell from the balance sheet given in Question 8 below how much merchandise has been handled during the period prior to the balance sheet? how many sales have been made?
2. What would be the effect, on the balance sheet of a business, of donating

an unused small building and the land on which it stands to an independent coöperative store conducted by employees of the business?

3. Give an illustration of paying a debt by means of the creation of a new debt (a) when the change would affect the balance sheet, and (b) when it would not affect the balance sheet.
4. Is it possible to tell from the balance sheet given in Question 8 below whether the accounts payable were incurred for the specific merchandise included among the assets?
5. In case of the unexplained disappearance of an asset, and the abandonment of hope of recovery, can the books be kept in balance? If so, how? If not, why not?
6. Give an illustration of settlement with a retiring partner for his ownership-claim without the immediate reduction of any assets on the balance sheet and supposing no losses to have occurred.
7. The following is the balance sheet of the business of A who has invested money and is about to begin operations:

Cash	<u>\$5,000</u>	Proprietor A	<u>\$5,000</u>
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Show how the balance sheet will look after the following transactions: A buys merchandise for cash, \$1,000, and fixtures for cash, \$1,800. He buys on account merchandise for \$2,000. He admits B as a partner on equal terms with himself on B's investing \$5,000 worth of chandise.

8. The balance sheet of B, C & Company is as follows:

Cash	\$ 3,000	Proprietor B	\$10,000
Merchandise	8,000	Proprietor C	10,000
Accounts Receivable	12,000	Accounts Payable	3,500
Fixtures	500		
	<u>\$23,500</u>		<u>\$23,500</u>

Show the new balance sheet after the following transactions:<sup>1</sup>

B withdraws \$500 in cash for his personal use.

Accounts payable are paid, \$1,000.

Accounts receivable are paid, \$4,000.

Merchandise, \$6,000, is bought on account.

Accounts payable, \$3,000, are paid.

Accounts receivable, \$5,000, are paid.

Merchandise costing \$2,000 is sold for cash, \$2,500.

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<sup>1</sup> The easiest way of working out this problem is to copy the balance sheet, as given, with ample space on the two margins of the sheet, and then to indicate the changes in each item by placing in the margins the amounts of change (with plus and minus signs) opposite the name of the appropriate accounts. Then the consolidation of the new items with the old will give the final balance sheet. [This is not bookkeeping method, but it will show the student the need of a bookkeeping method to be described later.]



## CHAPTER III

### THE FUNDAMENTAL PRINCIPLE OF DEBIT AND CREDIT

**Definition of an Account.** The various sorts of information so far as they can be expressed in financial figures, i.e., dollars and cents, are kept in what are called "accounts" — and the word has a specific meaning as well as the larger generic meaning applied to accounting and bookkeeping as a whole. In the specific sense, an account is a classified arrangement of all the financial items pertaining to one kind of information about a business, and that information may be concerned with the relations of the business to an individual, as the proprietor or a lender, or it may be concerned with property, as cash or merchandise. The name of the account indicates the sort of information comprised under it. The form of the account is varied; but the essence of an account lies in the fact that it deals with one kind of information only, that it covers all financial information on that subject for the period of time which it is meant to cover, and the net figure of the account at any time represents the net financial status of the business, at that time, in respect to the matter indicated by the title of the account. If, therefore, the form provides clear means of showing increases and decreases in the financial figures for which the account stands, and provides also for showing the balance, or net standing of the account, it has served its purpose. Increases and decreases in an account are a means not only of obtaining the balance at any time, but of showing the volume of transactions for any period. Increases and decreases are shown through what are called "debits" and "credits."

**Need for Bookkeeping Device to Record Change.** We have now observed that many individual facts about business need record: for example, in order to show all the facts about each important aspect of a business, separate accounts are kept for each such aspect, and these accounts consist of financial figures arranged so as to show all increases, all decreases, and to provide for showing the balance or status at any time; two general types of accounts are kept — assets, and ownership-claims; any change in the total of

assets requires a corresponding change in the total of ownership-claims — for no assets in business can be unowned and no one can be the owner of property that does not exist; some transactions may take place without affecting the total of either assets or ownership-claims — for assets may be exchanged one for another, without affecting the total of assets, and then ownership is not affected, and ownership-claims may be exchanged without affecting the total of such claims, and then assets are not affected; assets and ownership-claims are subdivided into groups, and hence it must follow that an exchange of an asset in one group for one in another group, or an exchange of an ownership-claim in one group for one in another group, involves a change on the balance sheet in both the increased group and the decreased group. In other words, any change on the balance sheet affecting any item affects also some other item — on the principle of double entry discussed in Chapter II. It now becomes obvious that with constant transactions, many hundred a day in active businesses, some means other than the constant making of changes in balance-sheet figures is necessary for rapid and accurate work. This means the need of a device or bookkeeping method for recording all changes in such a way that, with the minimum labor of original entry, the ultimate result not only on the balance sheet but on the statement of volume of transactions can be obtained readily. We shall also see in Chapters VI and VII that we need other figures for our statement of operations, for increase or decrease in proprietorship from gain or loss must be analyzed into causes. Doubly necessary is it, therefore, to have a device for making, as we go along, records that can be summarized readily for our periodic statements. Many forms of books and loose sheets are in use for this purpose, but all hinge on the use of “debit” and “credit,” and therefore we should examine the significance of these terms before we examine the books that use them.

**What Changes Need to be Recorded.** We may well first note that what we are after is a device for accumulating in a record, ready for instant use, all

- (1) increases in asset accounts
- (2) decreases in asset accounts
- (3) increases in ownership-claim accounts
- (4) decreases in ownership-claim accounts

No other changes are possible, of course, for no others can affect a balance sheet; and a balance sheet can always express the status of a business. If we were to give a short name, for convenience, to each of these four changes, four terms would seem to be necessary. Yet when we realize that assets and ownership-claims can never get confused with each other if proper (distinctive) titles are used for the accounts representing them, it appears that not four names are necessary for distinguishing these changes, but, for reasons now to be indicated, only two.

**Explanations of Increases in Assets.** The task of the bookkeeper is to show the relations of the business with its owners and with others having ownership-claims, and to show what property the business has accountability for. Every change needs explanation from both of these aspects. In a sense, every change in any balance-sheet item is made in order to explain a change in some other item. If we buy goods on account, the increase in merchandise on the balance sheet is explained by the increase in accounts payable, and the increase in accounts payable is explained by the increase in merchandise. The two changes explain each other, and each is the complement of the other. If, on the other hand, we had bought the merchandise for cash, the decrease in cash would have been just as good an explanation of the increase in merchandise as was the increase in accounts payable in the other case. If we wish names by which to designate kinds of bookkeeping records, "entries" as they are called, we may have the same name for a decrease of assets that we have for an increase of ownership-claims, for they serve the same purpose — as, in the case above, the decrease in cash and the increase in accounts payable equally explaining an increase in merchandise.

**Explanations of Reductions in Ownership-Claims.** Similarly, if the proprietor withdraws cash for his personal use, his ownership-claim is thereby reduced, and the decrease in cash is the explanation of his reduced ownership; but equally the reduction of his ownership-claim is the explanation of the reduction in cash. Each is the complement of the other, and neither can stand alone, for neither can explain itself. If, on the other hand, instead of drawing cash he had purchased goods for his own use from a firm of whom his business buys, and had had the goods included in a bill charged



to his business and to be paid by the business, the increase in accounts payable (for the goods taken by him) would explain the decrease in his ownership-claim (just as if he had withdrawn cash), and the decrease in his ownership-claim would explain the increase in the other ownership-claim (accounts payable).

**Similarity of Different Types of Entry.** So for *purposes of explanation* of increase of assets, a decrease of another asset is as good as an increase of ownership-claims; for explanation of a decrease of assets, an increase of other assets is as good as a decrease of ownership-claims; for explanation of increase of ownership-claims, a decrease of other ownership-claims is as good as an increase of assets; and for explanation of decrease of ownership-claims, an increase of other ownership-claims is as good as a decrease of assets. Therefore the same name may be given to a bookkeeping record which shows increase of assets as to one that shows decrease of ownership-claims, and the same name to one which shows decrease of assets as to one that shows increase of ownership-claims.

**Debit and Credit.** The two terms actually in use to designate changes in assets and in ownership-claims are "debit" and "credit." Just what these terms mean is not important at this moment — indeed it is so little important that some who seem to go no farther say that the terms mean nothing at all. As a matter of fact, the use of them is much simplified by knowing and realizing what they mean, and we shall observe that soon. Their application can be briefly tabulated as follows:

A record showing an increase of an asset or a decrease of an ownership-claim is a debit

A record showing a decrease of an asset or an increase of an ownership-claim is a credit

It may seem as if from this grouping of transactions gains and losses have been omitted, but it will be remembered that gains are increases in ownership-claims, and losses are decreases in ownership-claims, and hence all classes of transactions are covered by the items listed above.

**Abbreviations for Debit and Credit.** Both "debit" and "credit" are commonly abbreviated — though just as some deny that the terms have any meaning, so some deny that the abbreviations have anything to do with these terms. The abbreviation "Dr." doubt-

less technically stands for "debtor," but it is conveniently used also to indicate that the record with which it is connected is a "debit" record, showing what has been listed above as a debit change. Similarly, the abbreviation "Cr." doubtless means "creditor," but it is conveniently used for any credit record, showing a credit change.

**Meaning of Credit.** The classification of records, or "entries" to specific accounts, as debit and credit may seem purely arbitrary, but it is closely related to the Latin words from which our bookkeeping records come, and to the common words "credit," and "debtor" and "creditor," of common speech. As a help in remembering which word applies to which change, one should remember that "credit" in Latin means "he grants, he entrusts." From this one fact and the additional fact that "debit" is the opposite of "credit," the application of the two terms to all possible cases is obvious when once observed. A further assistance may be found in the realization that we speak in everyday language of giving a man credit for doing any creditable thing. That is just what we do in bookkeeping — give "credit" for a thing which confers a benefit upon the business. We credit the proprietor for what he invests, because the capital enables the business to conduct operations. We for the same reason credit a seller of goods who furnishes us our stock in trade.

**General Scheme.** With this fundamental notion of credit and realization that debit is the opposite of credit, let us work out a general scheme of debit and credit and a convenient way of remembering the distinction between debit and credit.

The whole system may be based on the fact that we credit the proprietor for conferring upon the business the amount of his investment (increase of ownership-claim).

Every other change in assets or ownership-claims is either similar to that above or is the opposite or complement of it.

If the change is similar to it, the record is, of course, a credit entry.

Only two types of change are similar to it: the first is the increase of proprietorship-claim through profits, and hence that increase is credited to ownership-claim; the second is the conferring on the business (by any one) of an asset otherwise than by investment or profit, as by loan, thus increasing and crediting ownership-claim.

All other changes are opposite to, or complementary to, our basic credit, as

a reduction in proprietorship-claim is the opposite change in the same account; and the entry is a debit (opposite of credit)

an increase in an asset is the complement portion of the record of an increase of ownership-claim; and the entry is a debit (opposite of credit)

a decrease in an asset is the opposite of an increase in an asset; and as the increase gives a debit entry, the decrease must give a credit entry: this change is *doubly* the opposite of an increase of an ownership-claim — for it is the *reverse* change, a decrease, in a *reverse* account, an asset, and so the entry is itself a credit.

In summary, then, we

credit		for
	ownership-claim accounts	increases
	asset accounts	decreases
debit		for
	ownership-claim accounts	decreases
	asset accounts	increases

For every debit an equal amount must be credited to some account, else the debit will not be explained; and for every credit an equal amount must be debited, else the credit will not be explained. So debits must equal credits always.

**Forms of Accounts.** We must next observe the form of accounts. The following gives correct results but fails to show the total volume of transactions for the year, and this volume is often so important for guidance that it is desired for the operating statement. In each case in the illustration below the notation at the side of the amount shows what other account was affected by the transaction which caused the change.

CASH	
Balance	1,500
Merchandise	200
Balance	1,300
Proprietor	400
Balance	1,700
Notes Payable	600
	2,300

Because this form fails to show the volume of transactions, a form in parallel columns is universally used, and of these



columns the left is used for debits to the account and the right for credits, thus:

	CASH		
(Dr.)		(Cr.)	
Balance	1,500	Mdse.	200
Proprietor	400		
Notes Payable	600		

Now the total of each column is the volume of that kind of transaction for the period to date (including balances from the preceding period), and the difference between the two columns of each account is the present balance, or indication of status, as desired for the balance sheet. This balance can be shown at desired times, by a device to be described later, as clearly by this parallel-column form as by the single-column form. The book in which this form is kept is called the "ledger." Let us see how debits and credits are applied to this form.

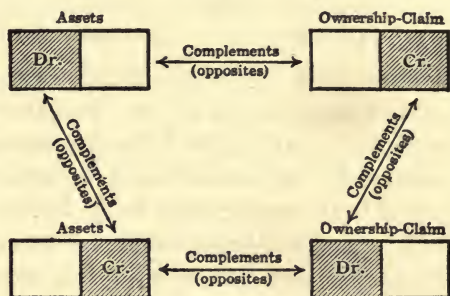
**Acquisition of Asset.** It is easy to remember, for the reason given on pages 24-25, that an ownership-claim account is credited for the conferring of an asset, and that an asset account is debited for the asset conferred. So the figure for each asset stands on the left or debit side of the ledger account representing it, and additions to the asset are recorded by additional items on the same side of the account.

**Surrender of Asset.** A decrease in an asset is a subtraction from it, and since all asset accounts are debited when assets are acquired, the bookkeeping device for recording a reduction is merely to credit the asset account by entering the item on the right or credit side of the ledger, showing that the amount is to be deducted from the other side when the balance or present status of the account is to be learned.

**Changes affecting Ownership-Claims.** A decrease in an ownership claim is a subtraction from it, and since all ownership-claim accounts are credited when claims are created, the bookkeeping device for subtracting from an ownership-claim account is to debit it for the amount of the decrease in the claim; so, as the original claim was entered on the right side of the ledger, the reduction will be entered on the left.

**Summary.** Assets in the possession of the business are recorded

on the debit or left side of the ledger, as are additions to assets; and deductions are entered on the credit or right side. Ownership-claims, and additions to them, are credits, and deductions are debits. This may be graphically expressed by the chart. It will be seen that credits are in all cases opposite debits, and debits in all cases are opposite credits. The two opposites of each pole, being opposite the same thing, are like each other; and, as we saw on page 23, they are equally serviceable for explaining that to



which they are opposite — an increase in an ownership-claim is as good an explanation of an increase in an asset as is a decrease in another asset, etc. Each pair of shaded items connected by an arrow represents record of a transaction — a debit and a credit — and the pairs of items represent, either singly or in combination, all possible complete transactions; for pairs not connected by arrows cannot represent transactions because they comprise either two debits or two credits, and a complete record of a transaction must have equal debits and credits.

**Illustrations.** Let us now try a few illustrations of debit and credit, remembering that for every dollar of debit made to any account a dollar of credit must be made to some account; for all financial (bookkeeping) transactions must be expressed in dollars. We may use here the transactions that we used for constructing the balance sheets in Chapter II, now formulating entries for each transaction, transferring or posting them to the ledger, and from the ledger constructing a final balance sheet. (The process of transferring items to the ledger is called "posting.") For the convenience of the reader in tracing entries into the ledger, the parts of each entry will be lettered and the corresponding items in the ledger will bear the same letters.

You and I begin business as equal partners with \$10,000 in cash. Then we, the proprietors, have an ownership-claim of \$10,000 to the property we have invested, and we credit Proprietorship-

Claim for that amount. The cash which we have granted to the business is the complement of the proprietorship-claim which we have credited, and therefore is debited. The entry expressing the transaction is:

	<i>Debit</i>		<i>Credit</i>
1	(a) Cash	10,000	(b) Proprietorship-Claim 10,000

We now post this to the ledger on page 30, lettering each item in the manner stated above. In actual practice a page or definite portion of a page in the ledger is reserved for each account, and all postings to that account must be entered in that place. An item posted to the wrong space in the ledger is worse than one omitted, for it means that two accounts are wrong — that in which the item stands and that from which it has been omitted; and, as we shall see later, the omission of an item is more likely to be found than its posting to a wrong account.

Now we buy office furniture for \$1,000 in cash. For the acquisition of office furniture we debit Office Furniture \$1,000, and since in acquiring this asset we have given up another asset, cash, we credit Cash \$1,000. This gives us the entry:

	<i>Debit</i>		<i>Credit</i>
2.	(c) Office Furniture 1,000	(d) Cash	1,000

We now post this to the ledger.

Next we buy merchandise on account, \$5,000. We have again acquired an asset, merchandise. To record this we debit Merchandise \$5,000. We have, however, incurred a liability through this transaction — i.e., our creditor has a claim against us for which we are liable — and therefore to record the claim we credit Accounts Payable \$5,000. The entry for this is:

	<i>Debit</i>		<i>Credit</i>
3.	(e) Merchandise 5,000	(f) Accounts Payable	5,000

This is posted to the ledger.

Now we give promissory notes for \$2,000 to some of our creditors as a way of acknowledging formally, through negotiable instruments, our debt. We have exchanged one type of ownership-claim for another, Notes Payable for Accounts Payable. So we credit the increased claim (Notes Payable) and debit the decreased claim (Accounts Payable) in the following entry:



	<i>Debit</i>		<i>Credit</i>
4.	(g) Accounts Payable 2,000	(h) Notes Payable	2,000

This in turn is posted.

We now sell, for \$4,000 in cash, merchandise which cost \$3,000. We have acquired \$4,000 of cash through the sale and so must debit Cash \$4,000, but we have given up \$3,000 of merchandise and hence must credit Merchandise \$3,000. It is obvious, however, that we have made on the sale a profit of \$1,000, which cannot remain unclaimed, and since the profit was made through our enterprise we may credit Proprietors' Profit-Claim to record the gain. Our entry is:

	<i>Debit</i>		<i>Credits</i>
5.	(i) Cash 4,000	(j) Merchandise	3,000
		(k) Proprietors' Profit-Claim	1,000

This is now posted.

Now we use \$2,000 of our cash to pay off our notes payable. So we credit Cash \$2,000 for the reduction of asset, and debit Notes Payable \$2,000 for the reduction of ownership-claim. The entry for the payment is:

	<i>Debit</i>		<i>Credit</i>
6.	(l) Notes Payable 2,000	(m) Cash	2,000

This is posted to the ledger.

Next a change of style in merchandise forces us to sell our remaining merchandise (shown in the merchandise account as now \$2,000) for \$500 in cash. Cash is debited for the increase of \$500. Merchandise, on the other hand, is credited for a reduction of \$2,000. So our credits exceed our debits. What has happened? Inasmuch as merchandise has been sold at a loss, there is now less property in the business than is claimed, and claims must be reduced on the books. Outsiders cannot be held responsible for losses due to our inability to foresee changes in style, and consequently we must reduce our proprietors' claim. The loss has destroyed not only the \$1,000 profit made on previous sales, but in addition \$500 of our original investment. The entry for the sale is:

	<i>Debits</i>		<i>Credit</i>
7.	(n) Cash 500	(q) Merchandise	2,000
	(o) Proprietors' Profit-Claim 1,000		
	(p) Proprietorship-Claim 500		

This entry is now posted to the ledger.

Lastly you withdraw from the business, taking in cash your share, but I continue alone. One-half of the proprietorship-claim (your share) is \$4,750, and this amount is paid to you in cash. Therefore Cash is credited \$4,750, and Proprietorship-Claim is debited for that amount. The entry is:

<i>Debit</i>		<i>Credit</i>	
8. (r) Proprietorship-Claim	4,750	(s) Cash	4,750

This is posted to the ledger.

The ledger which contains these postings looks as we find it below. It has the same debit and credit items as were given above, but the arrangement is classified rather than chronological.

#### LEDGER <sup>1</sup>

##### CASH

(a) [Proprietorship-Claim]	10,000	(d) [Office Furniture]	1,000
(i) [Sundries]	4,000	(m) [Notes Payable]	2,000
(n) [Merchandise]	500	(s) [Proprietor]	4,750

##### PROPRIETORSHIP-CLAIM

(p) [Merchandise]	500	(b) [Cash]	10,000
(r) [Cash]	4,750		

##### OFFICE FURNITURE

(c) [Cash]	1,000
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##### MERCHANTISE

(e) [Accounts Payable]	5,000	(j) [Cash]	3,000
		(q) [Sundries]	2,000

##### ACCOUNTS PAYABLE

(g) [Notes Payable]	2,000	(f) [Merchandise]	5,000
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##### NOTES PAYABLE

(l) [Cash]	2,000	(h) [Accts. Payable]	2,000
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##### PROPRIETORS' PROFIT-CLAIM

(o) [Merchandise]	1,000	(k) [Cash]	1,000
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I now wish to see a balance sheet reflecting the present status of the business. Listing the debit and credit balances on the ledger gives me what I wish, as follows:

<sup>1</sup> The name of an account in brackets [ ] indicates the account to which the other half of the entry is posted. Where a change in one account is explained by changes in more than one other account, the other accounts are not necessarily individually named, but are indicated as a group by the word "Sundries."

<i>Balance Sheet</i>			
Cash	\$6,750	Proprietorship	\$4,750
Office Furniture	1,000	Accounts Payable	3,000
	<u>\$7,750</u>		<u>\$7,750</u>

This corresponds exactly to the final balance sheet on page 16, for it has resulted from the same transactions.

It is obvious that making entries and posting the items to ledger accounts from which balance sheets may be at any time drawn up is much easier and simpler than constructing perpetually changing balance sheets as shown in Chapter II.

NOTE. No attempt is made in the early chapters of this book to use for titles of accounts the exact forms common in business. The common business forms are more or less abbreviated, and the reader may be confused by them. The titles used here are meant to be more suggestive of the content of the accounts than those commonly used.

### QUESTIONS AND PROBLEMS

- State what transactions would give rise to each of the following entries:
  - A debit to Cash and a credit to Accounts Receivable
  - A debit to Proprietorship and a credit to Cash
  - A debit to Notes Receivable and a credit to Accounts Receivable
  - A debit to Fixtures and a credit to Proprietorship
  - A debit to Proprietor's Profit-Claim and a credit to Merchandise
  - A debit to Merchandise and a credit to Accounts Payable
- What financial status is reflected by each of the following ledger accounts?

CASH	
10,500	10,000
ACCOUNTS RECEIVABLE	
10,000	9,500
MERCHANDISE	
10,000	
PROPRIETOR	
500	10,000
NOTES PAYABLE	
1,000	2,000
REAL ESTATE	
10,000	500



3. Determine for the following transactions whether the account named in parenthesis is to be debited or credited.
  - (1) Receiving cash for a debt due you (Cash), \$500
  - (2) Selling merchandise (Merchandise), \$1,000
  - (3) Paying John Jones \$3,000 owed him (John Jones)
  - (4) Buying merchandise on account (Merchandise), \$2,000
  - (5) Buying equipment for cash (Equipment), \$500
  - (6) Buying postage stamps (Postage), \$50
  - (7) Paying for merchandise (Cash), \$1,000
  - (8) Receiving cash on accounts due (Accounts Receivable), \$1,000
  - (9) Buying merchandise on account (Accounts Payable), \$5,000

(Cue: the debits called for amount to \$6,050, the credits, to \$8,000)
4. Show what is to be debited and what credited for each of the following transactions:
  - (1) A invests cash, \$10,000
  - (2) Merchandise is bought on account, \$3,000
  - (3) Fixtures are bought for cash, \$1,000
  - (4) Merchandise which cost \$1,200 is sold for \$1,500 cash
  - (5) Merchandise is bought for cash, \$4,000
  - (6) Merchandise previously purchased is now paid for, \$3,000

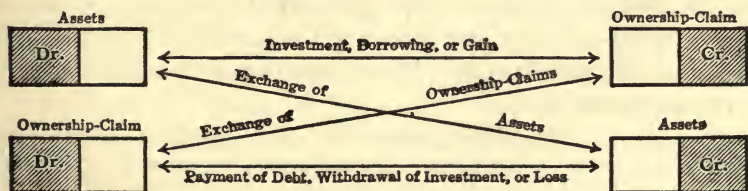
Do your debits equal your credits?
5. From the entries made for Question 4 construct the ledger. Does the total of all debit ledger postings agree with the total of the debits in Question 4? Do the credit ledger postings agree with the credits of Question 4?
6. Construct debits and credits expressing the transactions given below and post them to the ledger.
  - (1) The proprietor invests \$20,000 — \$10,000 in cash and \$10,000 in real estate
  - (2) Merchandise is bought for \$9,000 on account
  - (3) Office equipment is bought for \$850 in cash
  - (4) Merchandise which cost \$1,800 is sold for \$1,200 on account, and for \$800 in cash
  - (5) Payment is made for merchandise previously bought, \$2,000
  - (6) Insurance is prepaid, \$78
  - (7) Merchandise which cost \$1,500 is sold on account for \$1,450
  - (8) The proprietor withdraws \$500 in cash
  - (9) A promissory note is given in payment of merchandise previously bought on account, \$2,500
  - (10) Merchandise costing \$5,000 is sold for \$5,800 in cash
  - (11) Payment of \$2,000 is made for merchandise previously bought

List the debit and credit ledger totals at this point.

## CHAPTER IV

### THE INTERPRETATION OF DEBIT AND CREDIT

**Nature of Debit and Credit.** The illustrations that have been used in Chapter III have been of a simple type, for all assets covered by them are tangible and easily recognized as assets. It is now worth while to take a few cases less obvious and see what we can discover about the nature of debit and credit. Let us first summarize our discussion of debit and credit to this point. We have seen that we have on the balance sheet only two main classes of accounts — assets, and ownership-claims (the latter embracing both the controlling-ownership claims of the proprietor to the property of the business [his investment, plus profit, minus loss] and the non-controlling-ownership claims of outsiders). Since we have also seen that for every dollar of debit there must be a dollar of credit (else things are not explained), it is obvious that for every dollar of debit to any asset account there must be a dollar of credit either to some other asset account or to some ownership-claim account (for there are no other kinds of credits); for every dollar of credit to any asset account, there must be a dollar of debit either to some other asset account or to some ownership-claim account; for every dollar of debit to any ownership-claim account, there must be a dollar of credit either to some other ownership-claim account or to some asset account; and for every dollar of credit to any ownership-claim account, there must be a dollar of debit either to some other ownership-claim account or to some asset account. The following diagram expresses this in summary fashion:



This diagram is a development of the diagram on page 27. Each pair of shaded items connected by arrows represents an entry

of the type indicated, and all possible entries are of one of these types. Though all this is mathematically and logically true, it is not always obvious in the concrete cases of business, and therefore we must examine a number of typical transactions and see just the significance of these principles.

**Examination of Debits.** Let us examine first the debits which are made when assets are given up — that is, let us take a number of cases in which an asset account is credited and see just in what senses it is true that the complementary debit represents either another asset acquired or an ownership-claim reduced.

**Wages.** If we pay wages in a factory, we are getting value added to the raw material of our production, and hence are getting back in the form of finished goods (or in goods-in-process, not yet finished) what we pay in wages. We are merely exchanging cash for enhancement of value in goods, one asset for another. Finished Goods may be debited, and Cash credited.<sup>1</sup>

**Sales Salaries.** If we pay a salary to a salesman, we are again getting a new asset for an old. The salesman, if he earns his salary, is actually selling goods — he is converting goods on the shelves into goods sold; and goods in the hands of a satisfied customer are worth more than goods on the shelf. As a matter of general economic principle, the skillful merchant renders a service to the community by adding to the value of goods, for to the valuable qualities which goods possess in the hands of the manufacturer he adds the quality of being where they are wanted by the customer when they are wanted by the customer — that is, in an available store ready to be delivered. The salesman contributes to that service and to the enhancement of value arising from that service, and hence he confers upon the merchant an asset (the quality of being in the customer's hands at the right time) in exchange for his salary. Sold Goods may be debited and Cash credited. (If the salesman does not earn his salary, the transaction is of a different type, to be explained later.)

<sup>1</sup> The names of the accounts are given here with capital initials; and hereafter when an item is given with a capital initial, and otherwise would not have a capital, it will be understood to refer to an account with that title, whereas if the name is given with an ordinary small-letter initial it will be intended to refer to the thing itself and not to an account: thus "Cash" means the account for cash, but "cash" means money; "Real Estate" means the account for real estate, whereas "real estate" means the property itself.



**Engineer's Wages.** If we pay wages to railroad engineers, we are exchanging cash for a new asset. The new asset is the movement of trains. Cars and locomotives in the storage yards are earning nothing; but cars and locomotives moving up and down the road are worth more than those standing idle, and this movement is an asset secured by paying cash as wages (among other things) in exchange for it. Movement of Cars may be debited and Cash credited. This is immediately followed, of course, or should be, by another conversion — movement of cars into cash collected. When the movement has so resulted, Cash may be debited and Movement of Cars may be credited. If the movement does not result in cash collections (either directly or through the sale of tickets), we get another type of transaction to be discussed later.

**Interest.** If we pay interest in advance, we exchange one asset for another. Cash is given in exchange for a right, and that right or claim consists of the privilege of using other people's money for the purposes of business. Whether the money will be used to earn a profit or merely to carry on some desired enterprise, such as the conduct of an educational institution, the privilege of using the money is an asset for the purposes of the business whose accounts we are keeping. We may debit Use of Borrowed Funds and credit Cash.

**Insurance.** If we pay fire insurance premiums in advance, we are exchanging cash for protection against loss of property, and since a guarantee of reimbursement in case of loss of property is of value, that guarantee is an asset. We may debit Insurance Protection and credit Cash.

**Taxes.** When we pay taxes we get no tangible asset, but we get the right to conduct business in the locality (which would be denied us by social custom if we declined to pay), we get the protection of police and fire departments, we get the use of roads and sidewalks and sewers, etc. These intangible things are assets quite as real as tangible goods. Let any one who denies it try the experiment of becoming an outlaw and still attempting to do business with law-abiding people. We may debit Community Privileges and credit Cash.

**Depreciation.** We have next to consider certain transactions in which the conversion of one type of asset into another is less ob-

vious because no direct cash is involved. Depreciation of machinery is a good illustration. Here no direct exchange of cash or any other specific asset is made for a new asset. In reality, however, the exchange is quite as real as the exchange of cash for new merchandise: the only difference is that the exchange is gradual rather than immediate. Suppose we spend \$5,000 for machinery that will last ten years, but will then be worn out or behind the times and virtually useless. Why do we spend \$5,000 for the machines unless in the expectation of getting back our investment, with a profit, out of the product of the machine? The machines in the process of wearing out will in the ten years produce or become converted, along with raw material and labor and fuel consumed in creating the steam to drive it, into finished goods, which will be converted into accounts receivable, which will become cash, which may become new raw material and new wages and new machinery and profits. So the wear and tear of the machinery actually creates new assets. Depreciation, therefore, results in the need of an entry debiting Goods-in-Process or Finished Goods, and crediting Machinery — an exchange of an old asset (in part each year) for new.

**Expiration of Insurance.** A similar thing is true when we use up, through the lapse of time, such things as fire insurance prepaid. If we debited Fire Protection when the insurance was paid for in advance, we should as time goes by and the prepayments become exhausted, without waiting for their entire exhaustion, debit Goods-in-Process, or Finished Goods, or whatever account represents the assets which we are getting from our business activities, and credit Fire Protection.

**Partner's Salary.** When we pay cash to a member of a partnership for his salary, as may be called for by the partnership agreement, we may be doing any one of several things, according to circumstances. If he spends his time in selecting and ordering our stock, we are paying for a stock of goods on hand; for a well-chosen stock is more valuable than one of the same initial value if ill-assorted or too large or too small. If he sells directly or superintends salesmen and directs their activities so that they add to the value of goods by getting them into the hands of customers, we are paying for the increased value of goods in the hands of customers; if he is the financial manager of the business and establishes a line of credit



relations, we are paying for the privilege of borrowing money at perhaps 5% when without his attention to finances we might have to pay 6%. All these things are assets to the business. If the partner renders no personal service, but is given a salary merely to induce him to allow the business to use his name or his capital, the business is giving cash in exchange for the earning power of his name or his capital, and that earning power is an asset. If, finally, he is rendering no personal or financial service, but draws a so-called salary in addition to interest on his capital, merely as an owner of the business, the payment is then conferring no asset but is satisfying his ownership-claim. So in all these cases the giving up of cash either acquires another asset or satisfies a proprietor's ownership-claim.

**Contribution to Charity.** When we pay cash for a charity fund, we may be either acquiring an asset or satisfying an ownership-claim. If we contribute from selfish motives, in the hope that the reputation for generosity will increase our popularity or good will and bring trade (and if we are right in this hope), the asset is exchanged for another asset; but if we give unselfishly, without hope or result in increased business, we are disbursing proprietor's ownership-claim and thereby reducing it.

**Payment without Return.** In the case of wages paid without return in the form of goods sold (p. 34) or fares collected (p. 35), we have another illustration of reduction of proprietor's ownership-claim; but here the reduction is not presumably voluntary, but is due to one of the mischances of business.

**Late Payments.** Our general statement that debits show either the acquisition of assets or the reduction of ownership-claims holds true not only of payments made in advance, but of payments made long after the event. Suppose we in July pay wages earned in May. We are not apparently thereby increasing our assets, for the assets resulting from the labor in May existed all through June, or, if they did not so exist, they would not be called into existence by payment in July. Let us trace the transaction through, however. When the work was done in May, it was presumably worth while or we should not have had it done. If we had kept our books up to the times, we should have debited the work done, perhaps under the name of Goods-in-Process, or Finished Goods, and we



should have credited some ownership-claim, perhaps employees' ownership-claims — a simple case of assets and ownership-claims increasing together. Then on payment of wages in July, we should have debited Employees' Ownership-Claims (wiping out that liability) and credited Cash. So the disbursement of cash, though not for another asset, would have shown the reduction of an ownership-claim (assets and ownership-claims decreasing together). Since, however, by supposition, we did not make any entry in May for the work done and for the debt (we must under double-entry show both if we show either), we must in July when we pay show the effect of the transaction on both Goods-in-Process and Cash, and make provision for an entry to each. Our entry is merely behind the times, and for the sake of completeness of record we should catch up. Goods-in-Process must be debited to show what we got for the wages paid, and Cash must be credited; and it is quite the same thing whether the payment is made at the time the assets are acquired or later, except that, as we have just seen, theoretically there is in the meantime an ownership-claim both set up and paid off. That ownership-claim should be shown on the books if it is unpaid for any appreciable time; but in practice it is usually omitted altogether from the records if standing but a few days; so that often wages earned in one week are not entered in the accounts until the next week if paid in the next week, and then are treated without mention of ownership-claim at all, as if the exchange were Goods-in-Process directly and immediately for cash. So, in summary, in case the liability for the wages is entered on the books, the cash is given up for the cancelling of an ownership-claim; and in case the liability is not so entered, the cash is given up for another asset: but the net effect is the same in both cases — one asset exchanged for another, and the ownership-claim cancelled if set up at all.

**Ex-Post-Facto Payment.** Now suppose it is said that if the work done in May went into goods-in-process in May, and no entry is made until July, at the time the entry is made in July the asset will no longer be in the form of goods-in-process, for the goods may have been finished and sold and paid for. This does not alter the case. If the goods have been so converted, they have been converted into other assets, for the purpose of making goods-in-process is to con-

vert them into finished goods, and the purpose of making finished goods is to convert them into accounts receivable, and the purpose of getting accounts receivable is to convert them into cash, and the purpose of getting cash is to turn part of it into new goods-in-process (to start the cycle anew) and to give part of it to the proprietor as his gain. At whatever stage in the process we stop or however far we go, as just followed through, we find the cash paid for wages has become either some other asset or has paid an ownership-claim, and the only question is the title of the account to be debited — which will be observed later for such cases. The only possible exception is that of failure of the work done, in payment for the wages, to replace in the form of assets its cost. Suppose the work done was not successful and did not add to the value of goods-in-process. No asset account could be debited when Cash is credited, for none exists as a result of the work. Something must be debited when Cash is credited. What has happened? The proprietor's money, or a part of it, has been paid out for no return: the proprietor's assets have been reduced, and hence his ownership-claim has been reduced. So his ownership-claim account must be reduced by a debit. So here, too, when the credit to one asset account is not accompanied by a debit to another, it is accompanied by a debit to an ownership-claim account.

**Losses from Bad Debts.** Lastly, for the examination of debits, let us suppose that a customer who owes us \$2,000 goes into bankruptcy and pays his creditors only fifty cents on the dollar, or \$1,000. His account was debited on our books when he became indebted to us, of course. We must now credit it for the \$1,000 paid, and this leaves a balance unpaid of \$1,000 on the debit side. Since, however, we cannot collect this, it is no longer an asset, and it must be cancelled, or "written off." The way to cancel a debit is to make an offsetting credit to the same account. What shall we debit when we credit his account? No other asset account can be debited, for no asset is created or secured in exchange for his cancelled debt. The cancellation of his debt simply reduces the assets of the proprietor, and hence reduces his ownership-claim. Hence the proprietors' ownership-claim account is debited.

**Temporary Uncertainty Possible.** We have so far gone on the assumption that we always know whether the surrender of an asset



has acquired a new asset or has merely depleted the proprietors' ownership-claim — for example, whether the payment of wages has resulted in assets of at least equal value or has been in part extravagance because the wages did not replace themselves. At the time of making an entry, however, we do not commonly know the result of the transaction; for we cannot keep our investigations of such things always up to the moment. On occasion, however, and always before a periodic balance sheet is taken for determining important matters of policy, such things are investigated and the appropriate adjustment of the books to the facts is made.

**Summary of Debits.** Every case we have taken, therefore, and these are typical, shows us for every decrease in an asset, and credit to an asset account, a complementary debit which represents either another asset acquired or some ownership-claim reduced. If the complementary entry debits an asset account, the asset represented by the debited account is increased: if the debit is to an ownership-claim account, the claim represented by the debited account is reduced. We have now examined all types of debits arising from decreases in assets, i.e., all debits complementary to credits made to asset accounts. The only other origin for debits is transactions involving credits to ownership-claim accounts. These are simple, for we have only four kinds of ownership-claim credits, and all these obviously involve either an increase in assets or a decrease in ownership-claims. These kinds are (1) investment by proprietors (and this of course involves new assets or else the investment was not made), (2) profits belonging to proprietors (and if the assets do not exist the profits have not been made), (3) borrowing (and if borrowing was done, assets must have been borrowed), and (4) exchange of one claim for another (or a decrease in one claim offsetting a claim increased). In the first three cases a new asset is involved in the transaction itself, and in the last case an old ownership-claim is reduced by the establishment of the new one; so that we now find that our general statement is true for debits arising from credits made to ownership-claim accounts as well as for those arising from credits made to asset accounts. We now have our general principle, that debits always mean either increases in assets or decreases in ownership-claims; and since the title of an account should indicate whether it represents assets or



ownership-claims, the interpretation of debits should be easily possible.

**Examination of Credits.** We have already seen that all credits indicate either reduction in assets or increase in ownership-claims. The former are sufficiently obvious, for they have been amply illustrated in connection with the debits to which they are complementary. The latter, again, so far as they consist of investment by proprietors and loans by creditors, are obvious. Certain other types of credits, however, are worth attention in this connection.

**Temporary Ownership-Claims.** Sometimes temporary ownership-claims are established by the sale to others of something to be consumed in the future. When a railroad sells a mileage ticket it gets in return cash, but the right to rides represented by the ticket will not usually be completely exhausted at once. Hence against the asset received (cash) must be set a claim of the mileage holder. When the ticket is sold the entry may be a debit to Cash and a credit to Mileage Holder's Ownership-Claim. Then as the mileage is consumed, as evidenced by the conductors' returns, Mileage Holder's Ownership-Claim is reduced. Similar ownership-claims are established where tickets are sold in advance of their use. Until an equivalent for the cash is provided, the giver of the cash has a claim against the assets of the business.

**Automatic Increases in Ownership-Claims.** A business sometimes receives interest on money it has loaned outside or has deposited in its bank. The interest is paid in cash and the cash, of course, must have a claimant. (If the interest were not actually paid the increase in assets would be in the form of a claim for interest against the person to whom the money was loaned.) Who is the claimant for the increase in assets? Obviously the owners of the business. We will therefore credit an account showing the claim of the owners — thus increasing the Proprietor's Profit-Claim. Sometimes, too, a business receives a commission for selling goods for others. The commission is presumably paid in cash (though some other form of asset would be satisfactory), increasing the general assets and therefore at the same time increasing claims to assets; for all assets must have some claimant. Since the goods were sold by the business, the commission was earned by it, and the claim to the profit made is the proprietor's. As in the case of the

interest received, we may credit an account indicating the nature of the claim, or Proprietor's Profit-Claim. If, again, we should lease to another business some real estate which we own, we should receive rent, and the rent would be paid in cash or in some other asset. The claim to the asset would be our ownership-claim. As in the case of the interest and the commission, we should credit Proprietor's Profit-Claim. In all mercantile and manufacturing businesses, of course, more important than such items as these is the profit on merchandise, as illustrated in Chapter II. When such profit is made, the asset account representing the form which the profit has taken (Cash, Accounts Receivable, or Notes Receivable) is debited, and Profit-Claim is credited.

**General Summary.** To summarize: a debit always indicates an increase in an asset or a decrease in an ownership-claim; and a credit always indicates an increase in an ownership-claim or a decrease in an asset; and, though temporarily uncertainty may arise as to which has occurred, when time has been given for investigation of the few doubtful cases (such as payments of wages for which equal value in return may or may not have been secured) confusion should not result; for titles of accounts should indicate clearly whether the figures gathered in them are concerned with assets or with ownership-claims. The only way in which confusion is likely to occur is through the carelessness of common speech. It is common, for example, to say, "We have received interest on our bank balance," though what we have really received is cash, increasing both assets and Proprietor's Profit-Claim (subdivision, Interest). Care must be taken in bookkeeping not to allow the carelessness of common speech to confuse the two changes.

**NOTE.** The reader familiar with other discussions of the theory of accounts may be puzzled by the failure here to mention what are commonly called "nominal accounts." The whole treatment above is based upon the balance sheet, as if it were the sole end of accounting. From the point of view of this chapter, it is so. Later, however, attention is called to the fact that statistical information, concerning the nature of costs going into assets and the nature of the sources of income, is necessary for guidance in the conduct of business, and that separate accounts are established representing the elements of the assets and of ownership-claims. We shall see then, however, that the so-called "nominal accounts" actually represent assets or claims, and that there-

fore the theory enunciated here is not only pedagogically sound, in avoiding at this stage the philosophical distinction between real and nominal and mixed accounts, but practically and logically sound as well.

### QUESTIONS AND PROBLEMS

1. Indicate to which groups of accounts [Asset Dr., Asset Cr., Ownership-Claim Dr., Ownership-Claim Cr.] entries for each of the following transactions should be made:
  - (a) Buying merchandise for cash, \$3,215
  - (b) Paying wages in cash, \$873
  - (c) Investing cash, \$1,000
  - (d) Buying merchandise on credit, \$2,792
  - (e) Paying accounts payable, \$5,000
  - (f) Withdrawal of \$500 by proprietor
  - (g) Giving a note in payment of an account payable, \$1,000

Test the equality of debits and credits. The total debits are \$14,380.
2. The transactions following are recorded on the books of a business. Remembering that every transaction involves two changes, state whether the portion of each transaction indicated by italics below represents a change to be recorded in an asset or in an ownership-claim account, and whether such account is to be debited or credited. Give your reason for deciding as you do in each case.
  - (a) *Advertising* paid for
  - (b) *Insurance* prepaid
  - (c) *Commission* earned by us, but not yet paid
  - (d) *Gain* on sale of equipment owned
  - (e) *Rent* earned on buildings owned
  - (f) *Depreciation* on buildings owned
  - (g) *Raw materials* lost by fire
  - (h) *Interest* earned on bonds
  - (i) *Royalties* paid on machinery
  - (j) *Legal advice* paid for
  - (k) *Gift* in cash to an employee
  - (l) *Supplies* purchased on account
  - (m) *Taxes* paid in cash
  - (n) The amount *accrued against us* for interest on money borrowed, when the agreement provides for the payment of interest at the end of each six months and three months have elapsed
3. During the process of manufacture the driving belt of a machine has been worn out. Its cost is still included in the debit to Plant Equipment on the books. Assuming that the wear and tear have not been wasteful, how should you record on the books the exhaustion of its usefulness?



## CHAPTER V

### THE INCOME SHEET

**Records Necessary between Balance Sheets.** We have already seen that virtually every transaction brings about a change on the balance sheet. This suggests that the task of providing information for a balance sheet that is true to the moment requires constant vigilance and constant record. In fact, if we were to attempt actually to keep the balance sheet at all times fresh, we should have our hands more than full, and the expense of attempting it would be far greater than the value of the information obtained. Few business houses attempt to learn exactly their profit oftener than annually. This does not mean, however, that they are contented to let things go without any attempt to make records until the expiration of these various periods, for there is need of watching at frequent intervals some of the elements in the operations of the business, and therefore the records must be kept up to time even though they are not summarized and put into the form of a definite statement except at considerable intervals. The records indicating quickly moving tangible property, like cash and merchandise, and those indicating fixed sums due by and to the business, are usually kept day by day, so that errors can be detected, payments and collections can be made promptly, and daily policy can be determined intelligently; but accruing items, which are changing from day to day by mere lapse of time, like expiration of insurance prepaid, or growing liability for interest on money borrowed, are usually allowed to run for a convenient time without record, for the policy of the business need not be frequently changed by them, and are then recorded as of a specified day (determined by the circumstances of the case, as indicated later).

**Knowledge of Income not Enough.** It is not enough, however, for a business man to know whether his income has increased or decreased over a certain period, or even day by day; for that knowledge, though it may assist him to know whether he is getting richer or poorer, and help him to know whether he can afford to spend more or less for his personal expenses, etc., does not help him to know from what causes he has got poorer or richer, and therefore

gives him no means of knowing how he may overcome the causes of his losses and make further use of those causes which bring him gain. Any adequate method of record-keeping will indicate for the period under consideration exactly what are the amounts of loss from each cause of loss, what are the amounts of each kind of cost, what are the earnings from each ordinary source of gain, and what are the extraordinary gains.

**Separate Accounts to show Cause and Effect.** As we have seen that we need information about both the origins of profits and the causes of losses, it is obvious that we should not carry losses and gains directly to the proprietor's account, though any loss is a loss to the proprietor and any gain is his gain, but should keep the various items of expenses and gain separate one from another, as measured in dollars and cents, in order that they may be watched carefully for themselves and yet be ultimately shown in the proprietorship-claim at the end of such earning period as has been decided upon. In other words, though there is a proprietorship account with the name of the proprietor indicated on the books, there is also a considerable group of other accounts not showing the proprietor's name but indicating additional items of proprietor's ownership to be later consolidated. If, for illustration, merchandise is sold for more than it costs, the difference between the cost and the selling price is clearly a gain, and that gain has increased the proprietor's ownership; but it is important also to know that the profit is made on merchandise, so that one may know how far it is profitable to engage in certain kinds of enterprise; and therefore some merchandise account should show such profit; and the title might be "Merchandise Profit (a subdivision of the proprietor's account)." Losses from bad debts, on the other hand, involve a shrinkage in the proprietorship, and therefore when a loss is learned it should reduce the proprietor's account along with the reduction in the accounts receivable; but merely to do this would not show how much of reduction either of proprietorship or of accounts receivable was due to losses; and therefore an account is opened for losses from bad debts; and this might be entitled "Losses from Bad Debts (a subdivision of the proprietor's account)." Indeed, there may be forty or fifty such accounts, subdivisions of the proprietor's account, kept separately throughout

an earning period (for a month, a half year, or a year) and then consolidated into the general account for the proprietor's profit-claim. This is the usual method of double entry. As a matter of fact, however, the full names indicated above, suggesting subdivisions of the proprietor's account, are never used, for the custom of business is to recognize that such accounts are subdivisions of the proprietor's account without indicating that fact in the titles.

**Complete Statement of Profits and Losses.** We have already observed that no balance sheet can give any information about a business except for a moment of time, and the very next hour the situation will have changed. It will have changed not merely because possibly one asset has been exchanged for another, or because some asset has been applied to pay a debt, but usually because there has been some increase or decrease in the proprietorship. If, then, as we have already seen, the proprietor is to be given information about the conduct of his business, he must know those items which have changed his proprietorship not because he has invested more in the business or taken anything out (of which, of course, he is already aware), but because of those business forces causing gain or loss (of which he may not be constantly aware), and he requires this information not in isolated bits, but in a complete statement of changes in proprietorship involving both profit and loss and the net effect of them all. He desires this statement in addition to, and clearly distinguished from, the kind of statement previously discussed, which gives the status of the business at any definite moment of time. Here we wish a statement of changes over a considerable period of time, resulting in the conditions shown on the balance sheet at the end of that time. Usually, too, such a statement will show what disposition of profits was made — e.g., whether withdrawn or left in the business. Such a statement is commonly called an "income sheet." The following is an illustration:

Profit on merchandise	\$500
Commission earned	400
Rent earned	200
Interest earned	<u>300</u>
Gross income	\$1,400
Loss from bad debts	<u>200</u>
Net income	\$1,200
Drawn by proprietor	<u>200</u>
Balance undrawn	\$1,000



**Net Effect of Income Sheet Reflected in Balance Sheet.** It should be noted again at this point that the balance sheet at any time shows the condition of the business after the transactions indicated by the income sheet have been incorporated on the books. On the income sheet just shown we find that the gain has been \$1,200, and that the proprietor has drawn \$200. A balance sheet taken at this point, therefore, will show, as compared with that at the beginning of the period, an increase of proprietorship-claim of \$1,000; but though it must show at least one other effect, the detail of that effect will depend upon circumstances. If all other conditions except the profit are the same as at the end of the preceding period, and if the profit is now in the form of cash, the balance sheet will now appear (supposing the balance sheet on page 8 to be that of the beginning of the period) as follows:

Real Estate	\$50,000	Proprietor	\$93,000
Fixtures	2,000	Accts. Payable	45,000
Accts. Receivable	55,000		
Merchandise	25,000		
Cash	6,000		
	<u>\$138,000</u>		<u>\$138,000</u>

If, on the other hand, the undrawn profits had been applied, as fast as made, to paying debt, the balance sheet would now show Cash only \$5,000, or as it was on our prior balance sheet, and Accounts Payable would show only \$44,000. The profit here, then, would lie in a reduction of debt rather than in an increase of assets. In other words, the income sheet does not show us in what form the profit now stands, nor what changes in the form of assets and liabilities have been involved in earning these profits. It does, however, show us what change in proprietor's ownership-claim has occurred, and from what sorts of operations, and we thereby know how much change there must be in either the assets or the liabilities to match the change in proprietor's ownership-claim; for no one has made a profit at all unless he has either more assets or fewer liabilities. Only a study of both income sheet and balance sheet will tell the whole story. Indeed, to tell the whole story, we need two balance sheets and an income sheet — the two balance sheets give the terminals of the journey (the start and the finish), and the income sheet gives some of the details of the journey itself.

## QUESTIONS AND PROBLEMS

1. Should you expect to record day by day all information concerning each of the following? State why you answer as you do in each case.

- (a) Cash
- (b) Depreciation
- (c) Accounts Payable
- (d) Interest
- (e) Accounts Receivable
- (f) Insurance Prepaid
- (g) Notes Receivable

2. The following is the balance sheet of A, B & Co. on January 1, 1919:

Real Estate	\$ 5,000	Proprietor A	\$11,500
Cash	3,000	Proprietor B	11,500
Merchandise	14,000	Accounts Payable	3,000
Accounts Receivable	5,000	Notes Payable	1,000
Insurance Prepaid	500	Wages Liability	500
	<u>\$27,500</u>		<u>\$27,500</u>

The income sheet on January 31, 1919, was as follows:

Profit on merchandise	\$1,500
Rent earned	300
Interest earned	200
Gross income	<u>\$2,000</u>
Loss from bad debts	200
Net income	<u>\$1,800</u>
Drawn by proprietors (\$1,000 each)	2,000
Balance overdrawn	<u>\$200</u>

If there has been a reduction of \$2,000 in Accounts Payable, and of \$1,000 in both Merchandise and Accounts Receivable, but there have been no other changes on the balance sheet except those effected by the profit and its withdrawal (both in cash), is the following balance sheet for February 1, 1919, consistent with the balance sheet and the income sheet above? If so, explain all changes in the second balance sheet as compared with the first, and if it is not consistent show why it is not.

Real Estate	\$ 5,000	Proprietor A	\$11,400
Cash	2,800	Proprietor B	11,400
Merchandise	13,000	Accounts Payable	1,000
Accounts Receivable	4,000	Notes Payable	1,000
Insurance Prepaid	500	Wages Liability	500
	<u>\$25,300</u>		<u>\$25,300</u>

3. From the following information given by the ledger as of a certain date construct a balance sheet for that date and an income sheet for the preceding period: proprietor \$93,000, real estate \$20,000, notes pay-

able \$35,000, accounts payable \$50,000, rent earned \$1,500, accounts receivable \$78,000, interest earned \$500, merchandise \$57,000, profit on merchandise \$10,000, cash \$25,000, withdrawals of profits by the proprietor during the preceding period, as profits have been earned, \$10,000.

4. The balance sheet of a business on January 1, 1919, was as follows:

Office Equipment	\$ 1,000	Proprietor	\$40,000
Accounts Receivable	37,000	Wages Liability	500
Cash	2,500		
	<u>\$40,500</u>		<u>\$40,500</u>

On January 1, 1920, the balance sheet was:

Office Equipment	\$ 1,000	Proprietor	\$41,000
Accounts Receivable	35,000		
Cash	5,000		
	<u>\$41,000</u>		<u>\$41,000</u>

From the two balance sheets and from the information given below construct the income sheet for the year 1919. Commission earned was \$3,000, gain from services was \$12,000, losses from bad debts were \$1,000.

5. Should you need for guidance in conducting a manufacturing business any general information about its operations, expressible in dollars and cents, not given on the balance sheet or the income sheet? If so, what? Do you see any way of getting it by bookkeeping methods? If so, tell briefly by what methods.



## CHAPTER VI

### THE OPERATING STATEMENT — UNDER COST-ACCOUNTING METHODS

**Knowledge of Specific Costs and Specific Sources of Gain.** We have now seen how by a subdivision of the proprietor's ownership-claim account we can provide him with periodic information about the nature of the losses and earnings of his business. This is good as far as it goes, but it does not go far. He is likely to wish to know, for example, how the profit on merchandise was made up — how much of it arose from difference between buying price of merchandise and selling price, and how much of that difference was absorbed by wages of salesmen, by advertising, by taxes, by rent, by light, by freight charges, etc. In order to do things economically, he must know when he makes a saving and when he has an increase of costs, so that he may immediately seek for the source of the saving and duplicate it, or seek for the cause of the increase in cost and avoid it in future. No better help to successful conduct of business is found than knowledge of specific costs and specific sources of gain.

**Accounts for Specific Information.** Our accounts as so far constructed have not given us much information of this sort. We have shown the cost of raw materials, and of the various other items going into goods-in-process; but we have not traced the elements making up the excess cost of goods-in-process over raw materials, or of finished goods over goods-in-process, etc. Even if we knew the added costs to be excessive in any step along the way, we should not know from our books where to look to find them. Obviously we must make more careful record, as we go, of the specific costs that go upon our raw material to make up our goods-in-process, and of those that go upon our goods-in-process to make up our finished goods. Since for ordinary accounting purposes we put things on our books for what they cost us (any proper departures from that rule will be discussed later), we wish the cost of creating assets to appear on our books as increasing the value of the assets, as we have already done in the illustrations adding the cost of manufacturing wages to goods-in-process, etc. At the same time,

however, we see that if we are to watch our wages cost and know the effect of a change in the rate of wages upon our costs of finished goods, we must separate wages costs from other costs going into our goods-in-process. In other words, instead of debiting Goods-in-Process directly, as in the illustrative entries given, we may debit "Wages (a subdivision of goods-in-process)"; or, as we have already done with profits, we may omit the subtitle, and call it simply "Wages"; but we must remember that since the account is only a detail of our addition to goods-in-process, work done for the wages has increased the value of goods-in-process. For the purpose of the illustrations following, we will assume that all costs incurred result in an increase in assets, for of course the costs would not be voluntarily increased if that were not the case (later we will discuss those things which do not result in increase of assets but reduce proprietor's ownership-claims).

**Wages — A Typical Cost Account.** The case of wages just given is typical of a large group of costs entering into various assets, but requiring, in order that we may study them and judge of their wholesomeness or unwholesomeness, separate record. Let us examine some other elements needing separate record.

**Power — Its Elements.** Every one knows that power is one of the costs of manufacturing by power-driven machinery, and that if steam gives the power and is generated in one's own boilers fuel is a cost of power. Besides fuel, moreover, the cost of power includes the cost of lubricating oil for the engine, repairs of the engine and boiler, and numerous other items not necessary to specify here. The power going through the machinery converts the raw material or partly finished product into goods-in-process or finished goods, and so increases the assets; but in order to direct our factory operations successfully we must know more than the total cost of even this small subdivision of cost of assets. We must be able to learn whether it is better to use electric power than steam, to use fuel oil than coal, to buy power than to provide it ourselves; and these things require that we know the elements of our power cost. We ought to know, for example, whether one kind of lubricating oil is cheaper for us than another — not merely per barrel but per unit of horse-power produced. This means that we must know our cost of oil as a separate part of our power cost.

**Elements of Goods-in-Process.** Let us tabulate these items already mentioned, with assumed costs, realizing that they make but a small part of the total number of costs to be watched, and covering the others by an item of "other costs."

Goods-in-Process \$5,000	{	Raw Material	\$2,000	{	Fuel	\$200
		Wages	1,500		Oil	50
		Power	700		Repairs	250
					Other Costs	200
		Other Costs	800			

**Separate Account for Each Element.** The best way to record these facts for reference is in accounts. Such accounts represent the various elements of the cost of acquiring assets. Care must be taken not to get any of them on the books and on the balance sheet twice, for they would be counted twice if we should count them both as goods-in-process and as wages and power, or as both power and fuel. So they are entered in the first instance as raw material, wages, fuel, oil, repairs, and as whatever other things they chance to be—and then protection is provided, as we shall see later, against counting them again in the accounts for consolidation of elements.

**Assets Changing Form.** An interesting fact to observe now is that though these kinds of costs are elements of goods-in-process, and are debited to several accounts rather than to the single account representing such goods, some of these accounts (such as wages, fuel, oil, repairs) do not long represent assets recognizable under the names used in the titles of the accounts: fuel consumed is not recognizable as an asset in the form of fuel, for it has ceased to be fuel virtually at the moment it serves its purpose; oil consumed ceases to be oil; and by consumption in the engine both oil and fuel contribute to assets in the form of goods-in-process (on the assumption previously made that production is efficient). Fuel and oil consumed, then, though they no longer consist of fuel and oil as such, constitute the fuel and oil elements in goods-in-process and hence constitute assets as much as they ever did, but assets no longer recognizable under the names used in the titles of their accounts. If, then, we were to keep our books always up to the facts of the minute, we should each moment debit Goods-in-Process and



credit Fuel and Oil for the amounts of each consumed. The same thing would be done for wages, repairs, and a multitude of other things which lose their identity in their original form but go to make up other forms of assets; and yet for many of them this is not done but the accounts are kept as if the assets were in their original form, so that we may have the statistical record of their existence without the multitudinous entries of recording minute by minute and day by day their transformations.

**Current Changes Recorded.** For some items of this sort, however, it is desirable to make the entries for transformations virtually day by day. In a well organized factory, for instance, it is common to provide that whenever, and however many times a day, raw material is sent from the storeroom to the shop to be used for manufacturing, Goods-in-Process is debited and Raw Material is credited. (The actual items are not entered in the ledger individually, but the figures of each item are found and accumulated for entry in lump sum.) This is because we wish to know at all times how much material we have on hand, and hence as Raw Material is debited when such material is bought, it must be promptly credited when taken out of the storeroom for use.

**Current Changes not Recorded.** Usually the title of the account will itself suggest whether one should expect to recognize the property under the name used in the title of the account for it or to find that it has lost its identity by being merged in something else. Of this type, wages are a good illustration, for wages as such have no identity — before payment wages are not wages but money, and after payment they are not in the business at all: the value given for wages, however, is, in another form, in the assets produced by the wages, but continues to be shown in the account for wages.

**Another Illustration.** Perhaps the most extreme illustration that can be given of this sort of cost is the royalty paid by a shoe-manufacturing firm to the manufacturer of the shoemaking machinery which it uses. The owners of the patents on the shoemaking machinery make the shoemaking machines but never sell them: they lease machines to shoe manufacturers, and keep them in repair and replace them when worn out. For the use and maintenance of the machines the shoe manufacturers pay a royalty. This royalty payment gives a right to use productive machines.

Though absolutely intangible and not representing the value of any specific property that the shoe manufacturers can call their own, it is nevertheless a cost of manufactured goods and is represented in the goods manufactured because it has reproduced itself in the goods (for these machines do the work of many hand laborers and therefore contribute to the goods what the hand laborers would contribute). We might debit Goods-in-Process, or Finished Goods, and credit Cash for royalty. This, however, would not show on our books the statistical information about royalties paid, and therefore it is far better to debit Royalties, as a subdivision of our Goods-in-Process, and credit Cash. In no way can the royalties be identified in the product, but they are as truly there as is the leather which may conceivably be traced back to a particular skin bought: pieces of leather sewed together in a shoe are worth more than as leather, and the cost of sewing them together is a cost reproduced in the asset; hence in every shoe made is a bit of the royalty paid, for the royalty helped to convert the leather into the finished shoe. The total royalties paid for a period, then, constitute a part of the cost of acquiring assets and are in the assets in the form of shoes. The account for royalties, then, both represents assets and gives us the statistical figure of royalty costs incurred.

**Other Illustrations.** Akin to the payment of royalties as just described are payments for insurance, taxes, interest, rent, heat, light, etc., which serve their ends in making up the product and hence are elements of product; and the records of these are kept for statistical purposes, but they are at the same time in reality subdivisions of Goods-in-Process or Finished Goods, though each bears the name of the kind of transaction involved — Insurance, Taxes, Interest, Rent, etc.

**Goods-in-Process.** Our assets in the form of product, as we have just been seeing, are first represented in many separate accounts for detailed elements, and, as we saw a few moments ago, many of these elements are consumed in their original form almost as soon as they are acquired (labor services, for instance). Theoretically, we should daily debit Goods-in-Process and credit Insurance, Taxes, etc., for the day's transformations. Then the debit to the accounts representing the elements going into our product would give us our desired statistics, and the transfer of these to



Goods-in-Process (exchange transactions) would give us our costs involved in manufacturing. Some of the entries involved in these transformations we can conveniently make and do make daily, but for most of them more bookkeeping labor would be required than would be worth while for the information obtained, and hence the entries are made at intervals only. The goods-in-process, in turn, soon become finished goods, and so Goods-in-Process must be credited and Finished Goods must be debited for the cost of all goods sent from the shop to the warehouse as completed. The balance of Goods-in-Process when the books are kept up to the time represents the cost of goods in the shop uncompleted.

**Finished Goods.** We saw in the last paragraph that when goods are finished in the shop they are transferred to the warehouse or salesroom, and an entry is made debiting Finished Goods and crediting Goods-in-Process for the cost of the goods transferred. This is simple if the costs of the goods are known as they should be. Finding the cost of finished products day by day, so that we can debit Finished Goods and credit Goods-in-Process, is not altogether simple; for we cannot usually identify the various elements of costs in the product or without prohibitive bookkeeping labor distribute them daily on a comprehensive plan. Consequently some cost-finding method (which need not now be described) is adopted to give the information necessary for debiting Finished Goods. Finally, when finished goods are sold, Sold Goods is debited for the cost of the goods (as previously debited to Finished Goods and credited to Goods-in-Process), and Finished Goods is credited. This, it will be observed, leaves Finished Goods with a debit balance equal to the cost of the goods finished and not sold—the cost of goods remaining in the warehouse. After the cost of the goods has once been obtained, it is carried along through Finished Goods to the sale with no bookkeeping difficulty.

**Sold Goods.** At the same time that Sold Goods is debited and Finished Goods is credited, another debit and credit are made to show what was got for the goods sold, as we shall see presently (page 62).

**Summary.** We find, then, that at any particular moment the assets secured for conversion purposes may appear in any of several accounts on the books: accounts representing original form,



goods-in-process, finished goods, or sold goods. Many things are allowed to remain on the books under their original titles long after they have been consumed in their original form as fuel, insurance prepaid, etc., and then at convenient intervals they are transferred on the books to the accounts representing the forms which they have now taken. In other words, for considerable periods certain assets appear on the books not under names representing the present forms of those assets, but under names representing old forms already supplanted or consumed in acquiring new forms. This does no harm, however, if it is generally understood by all concerned with the books and records that the titles no longer represent the present status. As a matter of fact, as already indicated, in most businesses so many transactions occur daily that it would be a waste of time to attempt to show all details daily. Before a balance sheet could be drawn up on Tuesday morning to show the status on Monday night it would be already behind the times. So balance sheets are drawn up periodically, and no attempt is made to keep all information up to the times between the dates of balance sheets. In the meantime, statistical information of extreme value is compiled.

**Precautions.** Only two precautions are necessary. The first is to see that all titles to accounts are so clear that one knows what to do with the accounts under them at the time the books are brought up to the minute and the balance sheet is prepared. The second is to see that we realize that some of the costs incurred may not yet have gone altogether into the goods produced. We saw a few moments ago, for example, that when we buy raw material we debit the Raw Material account and credit Cash or Accounts Payable, and that when the raw material is issued to the shop to be used we debit Goods-in-Process and credit Raw Material. It would be a bad mistake to debit Goods-in-Process for all the raw material bought in any period if much of it were not used until later periods. The same thing is true of all our other costs. If we pay rent in July for three months, we must not deem that rent to be a contribution to the goods produced in July only, but to the goods of three months. In other words, we must always analyze the situation and see what adjustments or distributions are to be made of the things which we have given up in exchange for new things. Not all of what is given up is necessarily exchanged for immediate return in

new things, but only so much of it as is consumed in getting the particular new things now under consideration. So though our insurance is paid in July, possibly only one-twelfth of that is chargeable to the goods produced in July. If we kept our books always up to the times, we should daily debit Goods-in-Process for the expiration of insurance and credit the account for prepaid insurance; but this is so much work that ordinarily it would be done not more frequently than monthly.

**Illustrative Problem.** Let us illustrate this general plan of keeping statistical subdivisions of our asset accounts by a group of transactions. The transactions are listed first, and the entries follow. The reader is advised to observe the first transaction and then before looking at the corresponding entry in the second table to make up his mind what should be debited and what credited. After a few trials of that sort, he is advised to reverse the process and determine from the entry in the second table what he will find as a transaction in the first.

- (1) We invest \$8,000 in cash
- (2) We pay for raw material, \$5,000
- (3) We issue \$1,500 of raw material to the shop for manufacture
- (4) We pay wages, \$1,400
- (5) We pay insurance, \$300
- (6) We pay for fuel, \$350
- (7) We pay monthly rent, \$200
- (8) We pay for general monthly factory expenses, \$450
- (9) We find that we owe for royalty on machinery for the month, \$280
- (10) We send to the warehouse from the shop finished goods that cost \$1,800
- (11) We find that during the month we have burned \$100 worth of coal
- (12) We find that \$75 of insurance has expired

<i>Debited</i>		<i>Credited</i>	
(1) Cash	8,000	(1) Proprietorship-Claim	8,000
(2) Raw Material	5,000	(2) Cash	5,000
(3) Goods-in-Process	1,500	(3) Raw Material	1,500
(4) Wages	1,400	(4) Cash	1,400
(5) Insurance Prepaid	300	(5) Cash	300
(6) Fuel	350	(6) Cash	350
(7) Rent	200	(7) Cash	200
(8) General Expenses	450	(8) Cash	450
(9) Royalties	280	(9) Royalty Liability	280
(10) Finished Goods	1,800	(10) Goods-in-Process	1,800
(11) Goods-in-Process	100	(11) Fuel	100
(12) Goods-in-Process	75	(12) Insurance Prepaid	75

What are now our assets? Let us look at our individual accounts and see what balances they show. For convenience, since we wish to look at them in combination rather than individually, we will examine them as a list rather than in ledger form.

	<i>Dr.</i>	<i>Cr.</i>	<i>Dr. Balance</i>	<i>Cr. Balance</i>
Cash	8,000	7,700	300	
Proprietorship-Claim		8,000		8,000
Raw Material	5,000	1,500	3,500	
Goods-in-Process	1,675	1,800		125
Wages	1,400		1,400	
Insurance Prepaid	300	75	225	
Fuel	350	100	250	
Rent	200		200	
General Expenses	450		450	
Royalties	280		280	
Finished Goods	1,800		1,800	
Royalty Liability		280		280
	<u>19,455</u>	<u>19,455</u>	<u>8,405</u>	<u>8,405</u>

**Bookkeeping not Complete.** This at once discloses what would be an impossible situation if our books were complete. Though our debits equal our credits, as they must, Goods-in-Process shows a credit balance. A credit to an asset account means that more has been given up than received. This is impossible, of course. This at once suggests that our bookkeeping is not complete — or, better, that we have not yet combined all the facts, or elements, of Goods-in-Process into the account of that name so as to get them together. Examining the entries, we see that though Goods-in-Process has been credited for the finished goods sent from the shop to the warehouse, it has never been debited for some of the costs which have entered into both goods finished and goods still in process. It has not been debited for wages, or rent, or general expenses, or royalties. The titles of the accounts in which these items stand suggest that the accounts are subdivisions of Goods-in-Process, representing certain elements which have entered into our product, and that they must now be consolidated with the other items already included in Goods-in-Process.

**Transfer of Amounts to Goods-in-Process.** This consolidation consists merely in transferring from the statistical subdivisions of Goods-in-Process, Wages, Rent, General Expenses, and Royalties,



to the main account, Goods-in-Process, the amounts in the sub-divisional accounts. When we have an item on the debit side of an account and wish to transfer it to another account, so that the information may be found on the second account rather than on the first, we of course debit it to the new account (since it was a debit that was transferred), and credit it to the old account (simply cancelling the debit entry to the old account by an item on the side opposite to the debit that has been transferred — for we do not subtract on books of account but add to the other side, by a debit or credit, as explained on page 144). The actual entries follow:

<i>Debited</i>		<i>Credited</i>	
Goods-in-Process	1,400	Wages	1,400
Goods-in-Process	200	Rent	200
Goods-in-Process	450	Gen'l Expenses	450
Goods-in-Process	280	Royalties	280

**No Transfer of Elements not yet Used.** It will be noted also that we have not at this time transferred the balance of Raw Material, of Insurance, and of Fuel, to Goods-in-Process. We should not do so, of course, for not all the raw material and insurance and fuel have been consumed in producing goods; and we have already, by entries #3, #11, and #12 above, transferred to Goods-in-Process what has been consumed. In other words, we determine what entries to make preparatory to the drawing up of the balance sheet by inspecting each account and adjusting it to the present situation if it has not already been adjusted. Some items will have been automatically adjusted, because current information was needed, and others will be awaiting adjustment.

**Balances.** At this point we may well observe the balances of our accounts as they stand.

	<i>Dr. Balances</i>	<i>Cr. Balances</i>
Cash	\$ 300	
Proprietorship-Claim		\$8,000
Raw Material	3,500	
Goods-in-Process	2,205	
Insurance Prepaid	225	
Fuel	250	
Finished Goods	1,800	
Royalty Liability		280
	<u>\$8,280</u>	<u>\$8,280</u>

**What Balances Show.** Let us note the meaning of the figures. The proprietor has in the business \$8,000, and the owners of the machinery have a claim to \$280, or a total of ownership-claims of \$8,280; and those claims are offset by the assets. These assets, however, consist of two classes: (1) originally purchased insurance, fuel, and raw material, which have undergone no conversion but still remain in their original form; and (2) converted assets, in what are now partly completed and wholly completed goods, but were not long ago fuel and prepaid insurance and services of employees, and before that were cash. The stages of conversion of this last class have been traced along the whole process and records have been preserved statistically by the way. The only thing we might have done that we have not done is to keep the record of conversion day by day, but this is not worth while. Even our monthly subdivisive figures, like wages and rent, have disappeared from our final balances but remain on our ledger with the totals of both sides equal (and hence without balances) for our statistical information. If we should now list the balances in another form, separating the names of the accounts into two long columns, one for those having debit balances and the other for those having credit balances, we should have a balance sheet. In fact that is all a balance sheet is — a statement of ledger balances when the books have been brought up to the time designated as the date of the balance sheet.

**Relation between Principal and Subdivisive Accounts.** The relation between our principal asset accounts and our subdivisive accounts may now be wisely summarized. The simplest method of entry is to debit Goods-in-Process and credit Cash for all costs of producing goods — supposing we pay cash outright. If we need more information, however, as we do for a statement of operations, we may well make the record in two processes instead of one, thus: (1) Wages debited and Cash credited; (2) Goods-in-Process debited and Wages credited. The Wages items cancel each other and leave no balance, but they remain as totals and so give us our statistical information. In similar fashion goods-in-process get converted into finished goods and become recorded on our books.

**Profit and Loss.** Let us now continue our transactions and sell some of our finished goods. Suppose we sell goods which cost us \$1,200. These finished goods have now become sold goods, and so

we shall debit Sold Goods and credit Finished Goods. For the selling process some other transactions will necessarily be involved, like selling wages and advertising, but these are of the same general type as those of the manufacturing process and we will omit them here — though we shall observe them later. Suppose the selling price of these goods is \$1,700. We shall, if we are going to show our records completely, now debit Accounts Receivable (or Cash), \$1,700, and credit Sold Goods \$1,200 and Proprietor's Profit-Claim \$500. Our debits and credits to Sold Goods cancel each other, and no balance remains on the account, though the total shows the cost of goods handled. Our balance sheet will now look as follows:

Cash	\$ 300	Royalty Liability	\$ 280
Accounts Receivable	1,700	Proprietorship-Claim (Investment)	8,000
Finished Goods	600	Proprietor's Profit-Claim	500
Goods-in-Process	2,205		
Raw Material	3,500		
Fuel	250		
Insurance Prepaid	225		
	<u>\$8,780</u>		<u>\$8,780</u>

Even if the goods had been sold for less than they cost, the credit to Sold Goods would have to equal the debit, because the goods have been disposed of: and Proprietorship-Claim would be debited for the loss — that and Accounts Receivable together debited for the amount of credit to Sold Goods.

**Basic Method of Recording Assets.** This is the method, with some modifications of detail to be discussed later, used by most well organized manufacturing houses. A few primary facts about it should be noted. It is based on the fact that expenditures are not made ordinarily in vain, but for a return, and that therefore the assets given up in one form are received back in another (converted into that other by business processes). It is based on the need of having assets that are in recognizable form reported on the books as in that form — as Fuel, Raw Material, Goods-in-Process, Finished Goods. It recognizes, however, that the effort to show current changes of form, as the conversion of fuel into goods-in-process, would entail needless labor. It therefore continues on the books, as if in original form, many assets even after they have lost their original forms, and adjusts the record to the facts periodically.

**Variation Usual.** A variation of this method is desirable and



usual for the sake of saving bookkeeping labor. Obviously it is not necessary in connection with each sale to record immediately on the ledger just how much profit that sale yielded. Such information should be preserved in subordinate records ready for final incorporation in the proprietor's profit-claim account at such times as the books are to be brought up to a definite date. Hence it is customary not to split sales into their two parts: that part which represents an exact exchange of one asset (finished goods) for another (cash, or accounts receivable) at the same value, and that part which is profit. Customarily when a sale is made the credit is to Sold Goods, or Sales (as the account is more commonly called), for the total amount of the sale. Then the credit to that account represents partly the giving up of an asset (goods sold) and partly proprietor's profit-claim. Theoretically this double aspect of the account is unfortunate, for it does not distinguish fundamentally different things, but practically it is desirable, for it both gives a saving of labor (since by it many profits may be consolidated and transferred to the profit account in one lump sum), and provides us with the statistical figure for the total volume of sales at selling price. When profits are carried to the profit account directly, with only the cost portion of sales passing through the sales account (both debited and credited), nowhere will the books show the total volume of sales. The shorter method produces no confusion; for though the debit side represents costs, or assets at cost, and the credit side both giving up of assets and profits, the difference between the two sides always represents profits (or losses, if the balance is on the debit side), and all that needs to be done to complete the bookkeeping is to transfer the balance of the sales account to the proprietor's account (distinguishing his profit-claim from his investment account by a separate title — though the two may be consolidated after the figure has been once entered for record). Thus if goods costing \$1,200 are sold for \$1,700, the entries involved by the long method would be as follows:

<i>Debited</i>		<i>Credited</i>	
Sold Goods	1,200	Finished Goods	1,200
Accts. Receivable	1,700	{ Sold Goods	1,200
		{ Profit-Claim	500

The three entries involved by the short method follow:

<i>Debited</i>		<i>Credited</i>	
Sold Goods	\$1,200	Finished Goods	\$1,200
Accts. Receivable	1,700	Sold Goods	1,700
Sold Goods	500	Profit-Claim	500

The last entry is merely to transfer the balance of Sold Goods to Profit-Claim. What is called the short way above looks longer, for it appears to have more entries; but it should be remembered that the last pair of debits and credits is made only once for the whole period, whereas all the other entries are made for each sale. If there were one hundred sales, therefore, there would be by the long method two hundred debits and three hundred credits, or a total of five hundred, but by the short method two hundred one debits and two hundred one credits, or a total of four hundred two; and each credit to Profit-Claim by the long method would have to be found by performing a subtraction of cost from selling price, or one hundred subtractions in all, whereas by the short method one subtraction (total cost from total selling price) suffices. This short method is consistent with our theory of debit and credit, as expounded in Chapter IV, that all credits indicate either reduction in assets or increase in ownership-claim; for here our credit to sales is in part for reduction in assets (the cost of the goods sold), and in part for increase in ownership-claim (profits); or if a loss has been suffered, the credit to Sales is for less than the cost, and hence Sales has a debit balance (since it was debited at the cost of the goods), and this debit balance now represents a reduction in ownership-claim (as our theory of debit and credit shows us that a debit may do).

**The Operating Statement.** Let us now see an operating statement for this period, drawn from the detailed accounts and not from the balance sheet. The latter shows, it will be remembered, our status at the end of the time; but the operating statement shows chiefly how the change in our proprietorship status, as compared with that of the preceding period, was brought about, and can be got from the ledger accounts. First, we must note that what we wish to show is (1) the cost of all assets that have been converted from original forms into other forms, and (2) the value received from those converted forms, with (3) the net profit or loss from the conversion. All ledger balances, now that the books have been brought up to the time, belong on the balance sheet as assets or ownership-claims, but many accounts without present

balances, and hence not on the balance sheet at all, give us information regarding operations, and figures from them go upon the operating statement to show what items of converted assets brought in the returns from conversions — what items of assets in original form went to create by conversion the assets received from conversion, and hence are ultimately cancelled on the books by transfer to other accounts. The present totals of ledger accounts shown below are taken before the last entry transferring to Proprietor's Profit-Claim the balance on Sales, for on the operating statement we wish to show that profit in connection with the sales account rather than with the proprietor's account.

	<i>Dr.</i>	<i>Cr.</i>
Proprietorship-Claim		8,000
Cash	8,000	7,700
Accounts Receivable	1,700	
Raw Material	5,000	1,500
Goods-in-Process	4,005	1,800
Wages	1,400	1,400
Insurance Prepaid	300	75
Fuel	350	100
Rent	200	200
General Expenses	450	450
Royalties	280	280
Finished Goods	1,800	1,200
Royalty Liability		280
Sales	<u>1,200</u>	<u>1,700</u>
	<u>24,685</u>	<u>24,685</u>

The operating statement given by these figures follows.

*Merchandise Operating Statement*

Sales		\$1,700
Raw Material consumed	\$1,500	
Wages	1,400	
Rent	200	
General Expenses	450	
Royalties	280	
Fuel	100	
Insurance	<u>75</u>	
Cost of manufacturing	\$4,005	
Goods-in-Process at end	\$2,205	
Finished Goods at end	<u>600</u>	
Product unsold	\$2,805	2,805
Cost of goods sold	\$1,200	<u>1,200</u>
Net Profit		\$500



Let us now trace the origin of each figure on the operating statement. The sales item is the credit to Sales; raw material consumed is the credit to Raw Material, which was made when Goods-in-Process was debited for material converted; the wages item is the credit to Wages (and as the total debit to wages was chargeable to manufacturing costs, the transfer wipes out the account); the rent item is the credit to Rent (which is now wiped out); similarly, the items for general expenses, royalties, fuel, and insurance, are the credits to General Expenses, Royalties, Fuel, and Insurance Prepaid, respectively, for these credits show how much of the various debits were found chargeable to manufacturing processes (and the balances on Fuel and Insurance Prepaid represent values not yet converted and hence now on the balance sheet); the cost of manufacturing is the total of the elements shown, and it is proved by its agreement with the debit to Goods-in-Process on the ledger; the goods in process at the end is the balance on Goods-in-Process, in agreement with the balance sheet; the finished goods at the end is the balance in agreement with the balance sheet; the product unsold is the sum of the two preceding items; the cost of goods sold is the difference between manufacturing cost and product unsold, and it is proved by its agreement with the debit to Sales; the net profit is the difference between the cost of goods sold and sales, and it is proved by its agreement with the balance of Sales, which is to be transferred ultimately as proprietor's profit-claim.

**Comparison with Income Sheet.** A comparison of this operating statement with the income sheet on page 46 shows by how much we have carried our analysis beyond the first stages. On the income sheet, we have only one item for profit on merchandise, \$500. Here that \$500 is made up of thirteen details. How much more valuable the later statement is than the earlier for guidance in conducting the business is sufficiently obvious. To get a complete operating statement, of course, the other items of income and loss given on the earlier income sheet should be added to the merchandise operating statement, so that it would be identical with the income sheet given on page 46 except for the substitution of the merchandise operating statement above for the single item "Profit on merchandise." The practice of distinguishing between an in-

come sheet and an operating statement, as indicated above, is not universal, but in general a report of income in brief form, as first shown, is called an "income sheet," whereas only the fuller form should be called an "operating statement."

**When Entries are Made.** We have observed that many accounts are not kept up to the times, for they do not need frequent observation and to keep them up to the times would mean much unnecessary bookkeeping labor. Question at once arises as to when entries should be made. Unless we have some definite plan, we may omit or repeat items. We saw on page 37 that if we incur a liability for an asset we may either enter the transaction immediately, debiting the asset and crediting the liability, or we may postpone entry until the debt is paid, when we debit the asset and credit cash. Which of these we shall do depends on the timeliness that we require of our records: if we wish the asset to show at once, we must make the entry at the time of purchase, whether we care about the immediate showing of the liability or not; and if we wish the liability to show at once, we must make the entry at once even though we have no immediate need for the asset; but if we care about neither currently (because the items are small, or the liability is not due for a long time, or the assets do not need watching), we may postpone entry until payment is made. In preparing the books for the income sheet and the balance sheet, however, care must be taken that entries are made to bring everything up to the times, for not only assets and liabilities but costs and earnings must now be incorporated on the books. This means sometimes that the bookkeeper must look back and see when certain items were last brought up to the times. The date of the last entry, moreover, is not necessarily the date of the last adjustment; for certain transactions may require entry at certain times even though earlier items have not yet been entered and do not need entry. A good illustration of this is interest on borrowed money. Suppose we owe on two notes, and interest on #1 falls due March 1 and September 1, and on #2 falls due May 1 and November 1. When we pay interest on #1 on September 1, interest has already accrued on #2 since May 1; but we do not need to enter the interest on #2 on that day unless we are bringing our books up to the times on that day, though we must enter the interest on #1 in order to show what



has happened to our cash. On November 1, moreover, when we pay interest on #2, interest has accrued on #1 since September 1; but we do not need to enter it unless for some special reason. In other words, if an account is not of a sort to be inevitably kept currently, only an examination of the items will show whether it is current at any particular time. When, then, should entries be made? As a rule, whenever transactions culminate — i.e., whenever a natural period has been reached, such as a definite dealing or settlement. Closing a financial period is, of course, such a culmination, as are payments and adjustments. Other matters, such as accruals not paid, depreciation, expiration of insurance, etc., must be entered according to the need of the case — and such a need always arises from some sort of culmination of circumstances, such as wishing information of some type complete to a certain point.

### QUESTIONS AND PROBLEMS

1. As manager of a business should you be primarily interested in the operating statement or in the income sheet? Why? In which statement should you be primarily interested if you were a stockholder in the business, and why?
2. It has been said that many accounts are kept for elements of goods-in-process, and that though the elements soon lose their identity, the accounts are kept as if the assets which they represent were in their original form, so that we may have the statistical record of their existence. What is meant by "statistical record" and what is its value?
3. In 1919 the output of a business was 200,000 articles of a single type, the factory pay roll was \$500,000, and the average pay was \$2,000 annually. In 1920 the output was 216,000 articles, the factory pay roll was \$720,000, the average pay was \$3,000, and the conditions of production in other respects were unchanged. (a) Was the labor more or less efficient absolutely, irrespective of pay, in 1920? (b) Was the labor element of cost lower or higher per unit of production? (c) If in 1920 the average wages had been \$2,400, the total pay roll and the total output remaining unchanged, what would your answers have been to (a) and (b)? (d) If in 1920 the production had been 300,000 articles, the average pay \$3,000, and the total pay roll still \$720,000, what would your answers have been?
4. If accounts are kept by the cost-accounting method described in this chapter, and posting has been completed, what is represented by the balance of each of the following accounts (1) before the accounts are adjusted to the time, and (2) after they are so adjusted?
  - (a) Raw Material
  - (b) Fuel
  - (c) Finished Goods
  - (d) Goods-in-Process
  - (e) Insurance Prepaid



5. A business buys many of the parts of its finished product from other manufacturers and then combines the parts with new raw material. Construct entries for the transactions following, and carry the final profit to the proprietor. Record profit on sales by the short-cut method. [The profit is \$310.]

The balance sheet at the beginning of the period is:

Cash	\$ 8,000	Proprietor	\$15,000
Plant	<u>12,000</u>	Accounts Payable	<u>5,000</u>
	<u>\$20,000</u>		<u>\$20,000</u>

Raw materials are purchased for cash, \$5,000, and finished parts on account, \$3,000.

In the process of manufacture the following expenses are incurred: wages paid in cash, \$500; insurance, paid, \$100; taxes, accrued but not paid, \$30; supplies, bought on account, \$10; depreciation of plant, \$50. Raw materials, \$2,000, and purchased parts, \$1,000, are requisitioned from the store house for manufacture.

The goods are now found to be completed, and are sold for \$4,000 — cash, \$2,000, on account, \$2,000. The insurance is found to be expired, and the supplies to be exhausted, and there are no liabilities not shown on the books.

6. Show the ledger accounts and final balance sheet for the business in problem 5.
7. The following figures are found on the accounts of a business when all the adjustment entries except the last have been made.
- (a) Show what should be debited and what credited preparatory to drawing up the balance sheet.
- (b) Construct from the figures the statements for the manager.

	<i>Debits</i>	<i>Credits</i>
Proprietor	\$ 5,000	\$68,000
Accounts Receivable	30,000	
Accounts Payable		24,500
Real Estate	10,000	
Cash	25,000	
Wages	18,000	18,000
Power	3,200	3,200
Fuel	1,800	1,600
Raw Material	40,000	28,000
Other Costs	500	500
Goods-in-Process	51,300	40,000
Finished Goods	40,000	30,000
Sales	30,000	41,000
	<u>\$254,800</u>	<u>\$254,800</u>

## CHAPTER VII

### THE OPERATING STATEMENT — UNDER THE INVENTORY METHOD

**The Inventory Method.** We have so far assumed that the factory has a cost-accounting method that enables it to know the cost of each manufacturing step for the goods sold, and hence is able to carry those costs along day by day from the shop through Finished Goods and Sold Goods, and thus learns profits on specific items of sales. Let us now suppose this is not the case. Let us suppose that it has not taken the trouble to learn how much of its total expenditure for raw material, for labor, for fuel, etc., goes into any particular product, and so it has not debited Goods-in-Process for the cost elements involved; then it cannot know directly how much of each or of all of them has gone into the product of a month. This, as a matter of fact, is the truth about many businesses. How may we know how much value in raw materials, for example, went into the goods-in-process in a month? Supposing none were lost or stolen, it is obvious that the total on hand at the beginning of the month, plus the purchases, minus the total on hand at the end of the month, is the amount sent to the shop for manufacturing. In other words, we do for raw materials exactly what we did in the other case for fuel and insurance — determine the consumption by comparing the total available with what is left at the end. How do we find the value of goods finished in the month? We resort to the same method of inventory. We begin with the value of goods-in-process at the beginning of the month, add all the elements that have gone into goods during the month (fuel, wages, insurance, rent, etc.), and subtract the value of goods-in-process at the end of the month: the balance is the cost of goods finished in the month — for all we started with, plus all we added, minus what we have left, must be what we took out. By the same sort of process applied to finished goods, we can find the cost of goods sold. Then a comparison of selling prices with costs shows us our profit. This is obviously a much more clumsy way of learning profits than the other. It is particularly likely to err because it hinges very largely on the skill with which the valuation of goods-

in-process is made — for only by aid of that valuation can one learn the cost of finished goods and of sold goods. If the valuation put on the goods at the end is too high, the profit will be overstated, for by the same amount the cost of the goods finished and sold will be stated too low. Yet goods-in-process are peculiarly hard to value. How shall we know whether the manufacturing is half done or three-eighths done? Indeed, evaluation usually involves reasoning in a circle. Even if one could know, moreover, how can one find the cost, for instance, of a bicycle half finished when the cost of a finished bicycle is unknown and the cost of one half finished is itself a means of learning the cost of one finished? Hence the method which keeps costs item by item up to the finish is the only satisfactory method. Since it is not always practicable, however, because expensive, we must be satisfied in many cases with the crude method of finding only total costs at the end of long periods rather than individual-item costs at the end of short periods.

**The Costs.** Now let us see how this is done. We have seen that we cannot, because information is lacking in such cases, periodically charge Goods-in-Process, or Finished Goods, or Sold Goods, the exact costs: we must charge them, if at all, at rather long intervals on the strength largely of estimates of the value of unfinished goods at the time. By the cost-accounting method, it will be remembered, we charged first the elements of goods-in-process, and then Goods-in-Process, and Finished Goods, and Sold Goods, all at accurately known figures; and, as a part of this process, the original elements of which our new assets were made up were transferred on our books from time to time as we went along, leaving no balances, though the totals preserved our statistics. Now, however, the attempt to follow through all the steps in the process with only estimated or approximate figures would be rather ridiculous. It is wiser, as we cannot now know the details of the steps, to give up the attempt to record those steps and come merely to final results. We shall be less likely to err if we look at our condition at the end of the journey than if we try to think back and estimate and record our condition at each step along the way. We know our original starting point (our balance sheet at the beginning), we know what assets we have given up or acquired by the way and what transactions they entered into, and we can by examination of the present condi-



tion of specific accounts find our general condition at the end. We will not attempt to record all changes in Goods-in-Process, from our accounts representing the elements of the goods, nor in Finished Goods from Goods-in-Process, nor in Sold Goods from Finished Goods, for we know that the figures are now too late to have any practical significance. We will short-cut the whole thing, and consolidate the accounts representing the elements of our goods, except for the balances still on hand, directly in final accounts as if there had been no intermediate stages. The first step is to see what is now on hand of various types of assets, and then to see that that amount on hand is on the accounts representing those assets — left there if already there, or put there if not now there; and finally we transfer to Sold Goods all balances on asset accounts not represented by assets actually remaining on hand; for these are the costs of manufacturing and selling the goods.

**Illustration.** Let us try this method for the situation given in the last chapter, and then compare the result with that of the other method. Since by this method we have not certain information that was available under the other method, we shall have original entries slightly different from those on page 57. Transactions 3, 10, 11, and 12 are not now known to us: instead of them we shall learn, by taking account of stock, that \$3,500 of raw material is on hand and \$250 of fuel is on hand, and we shall learn, as before, that of the insurance \$75 has expired and \$225 remains. The entries that we shall make, during the period, from the information gathered during the period are as follows:

<i>Debited</i>		<i>Credited</i>	
Cash	\$8,000	Proprietorship-Claim	\$8,000
Raw Material	5,000	Cash	5,000
Wages	1,400	Cash	1,400
Insurance Prepaid	300	Cash	300
Fuel	350	Cash	350
Rent	200	Cash	200
General Expenses	450	Cash	450
Royalties	280	Royalty Liability	280

We must now prepare the books for the balance sheet and the operating statement. Cash of \$300 is already on the books at the right figure, and hence needs no attention: as it is still on hand it has not been consumed or converted in producing goods. Our ledger now

shows us Raw Material \$5,000 and we wish to reduce this to \$3,500 for the present status. So we must credit Raw Material \$1,500, for this is the amount converted. Since we do not know how much of this went to sold goods, how much to finished goods not sold, and how much to goods still in process, we do not know how much to debit to each of the accounts representing these things. As we are in suspense on this matter, we may as a matter of fact set up an account temporarily for such items of suspended information and call it "Converted Assets." We know that the raw material went into some goods (supposing none was lost or stolen), and we may temporarily debit Converted Assets and credit Raw Material for the amount. The same sort of thing is true of \$100 for fuel (for though our books show \$350, we find only \$250 worth on hand, and know that \$100 worth has been converted) and of \$75 for insurance: these have gone into unidentified assets. So we may also debit Converted Assets \$175, and credit Fuel \$100 and Insurance Prepaid \$75. In addition, finally, we must cover the costs wholly consumed — that is, all the costs of wages, rent, general expenses, and royalties. These may be entered, grouping all entries in the converted assets account, as follows:

<i>Debited</i>		<i>Credited</i>	
Converted Assets	4,005	{ Raw Material	1,500
		{ Fuel	100
		{ Insurance Prepaid	75
		{ Wages	1,400
		{ Rent	200
		{ General Expenses	450
		{ Royalties	280

So much for costs. The next step is to find the inventories not already known — for goods-in-process and finished goods. We find on examining the goods-in-process and the finished goods that we have \$2,205 of goods-in-process on hand and \$600 of finished goods. These last two figures are obtained not from the books, for the books have no such figures, but from observation and estimate; and as already indicated they are hard to get and likely to err; but for the sake of comparing methods we will here assume that we get the same figures as were shown on the books by the other method. Under this method, we do not know from just what specific expenditures these assets came — from just what raw material or fuel,

for example. We do know, however, that they with the goods sold make up the total of our assets converted by manufacturing processes into new forms from the old. Indeed, they make up our Converted Assets. Knowing, as we do from the figures found above, that the total converted assets cost \$4,005, and knowing as we do from our inventories that the goods-in-process and finished goods unsold together amount to \$2,805, we now know that the cost of goods sold is \$1,200, or \$4,005 minus \$2,805. We wish now to show on our books the cost of goods-in-process, finished goods, and sold goods; and since we have combined the total of the elements of cost of all of them as a debit to Converted Assets, we should, now that we know the final result, transfer that total to the various accounts representing the new assets taking the place of the old. This is done by transfer entries similar in nature to the transfer entries shown previously, thus:

<i>Debited</i>		<i>Credited</i>	
Goods-in-Process	2,205	Converted Assets	4,005
Finished Goods	600		
Sold Goods	1,200		

Now, of course, Converted Assets stands debited and credited for the same figure and is without balance in the end. Indeed, it is quite as if it had had no entries at all; for we have debited it for all the costs and credited it for the conversion, at the same figure, of those same costs, and the net result is the same as if we had debited our final asset accounts and credited our cost accounts in the first instance. The only reason we used this account was to show that under this method we could not ascribe certain specific costs to certain specific assets but must set off all costs together against all the produced assets together. Our Converted Assets now stands as follows on the ledger — the items on the left showing the details for which it was debited, and those on the right showing the details for which it was credited:

CONVERTED ASSETS			
Raw Material	1,500	Goods-in-Process	2,205
Fuel	100	Finished Goods	600
Insurance Prepaid	75	Sold Goods	1,200
Wages	1,400		
Rent	200		
General Expenses	450		
Royalties	280		
	<u>4,005</u>		<u>4,005</u>



**The Profit and Loss.** Under the cost-accounting method of handling sold goods, as described on pages 62-63, as will be remembered, Sold Goods is debited currently for the cost of goods sold (for the cost is known and carried through to the sale); and the credit for sales is not divided for each sale between that part which is conversion of an old asset at cost and that part which is profit, but the total selling price is credited to Sold Goods and only at the end of a period is the division made between that part which is cost (as shown by the debit side of the account) and that which is profit. Under the inventory method, however, since the cost of individual sales is not known, Sold Goods or Sales cannot be debited currently for the cost of goods sold, nor can the gain be determined for each item of sales even if that is desired. Hence under this method the only way of handling items of sales is to credit Sales for the selling price. Then a comparison of the costs debited to Sales in total, as found by the method shown on page 73, and the total credits for selling prices gives the profit or the loss on goods sold; in other words, the balance of this account is the profit or loss, and it may be transferred to the proprietor's account by transfer entries similar to those already discussed.

**The Operating Statement.** We now have all the figures available for our operating statement, and they are identical with those found by the cost-accounting method. The receipts from sales are found on the credit side of Sales, as before, the detailed costs are found on the ledger and in the consolidation of elements of cost, page 72, and the distribution of these costs is found in the record of transfer of these consolidated costs, page 73.

**Comparison of Methods.** Though our ultimate results are the same in the two cases, we must not fail to observe the difference in the working of the two methods. The inventory method depends so much upon the rare accuracy and good judgment of the persons making the inventories of goods-in-process that we may say it hinges upon them — and, as we have seen, the inventory itself is based upon the very costs that it is used to find; whereas the cost-accounting method finds costs first and from them learns inventories. The inventory method requires the taking of inventories as often as a statement is desired, and as taking inventories is labori-

ous the accounts are seldom brought to the current period and therefore balance sheets are infrequently drawn up; whereas by the cost-accounting method balance sheets may be drawn up without the labor of taking account of stock. Even under the cost-accounting method, however, it is necessary occasionally to take actual inventories for comparison with book inventories, for only so can the accuracy of the book figures be tested. The inventory method finds costs only in totals, and only at the end of each period; whereas the other method finds costs of specific articles and finds them currently. The inventory method can find profits only in totals, and only at the end of each period; whereas the other has all the figures for showing the profit on each item, and can record it immediately if it is desired. The value of knowing costs and profits or losses promptly and in detail, as compared with knowing them in totals (losses hidden behind gains) and only at long intervals, needs no comment. The fact is, however, that in many businesses the inventory method is the only one feasible, or thought to be feasible, and hence often must be used.

**Converted Assets Account.** It is interesting now to go back to our converted assets account, as described on page 72, and see how far we can make other use of it. We have seen that Converted Assets may be debited for all original assets or costs incurred, irrespective of the form in which they now stand, and may be credited for the new assets resulting from the conversion of the old, irrespective of the particular assets into which these costs were in the first instance converted. In other words, since we cannot under this incomplete accounting method trace costs and conversion item by item, we bring all items of costs into the same account with the items representing the ultimate form which those costs have taken at the end of the period. Indeed, we learned the cost of the goods sold, for comparison with selling price, by seeing how much of the total debit to Converted Assets was not accounted for by the Goods-in-Process and Finished Goods, for we had no other way of finding that cost. As a matter of fact, however, for the purpose of finding profits we do not need to show the selling cost on our books at all, but can go direct to profits if we wish. We have already seen that at the time sales are made a debit is made, under the inventory method, to Cash, or Accounts Receivable, and a



credit is made to Sold Goods or Sales, for the full selling price — a conversion of one asset into another at an increase in value. The excess of credit to Sold Goods over the debit to Sold Goods is proprietor's profit-claim. Now suppose we do not, though we did before, make any debit to Sold Goods (crediting Converted Assets), for the cost of goods sold, but transfer to Converted Assets at the end of the period all that has been credited to Sold Goods: instead of transferring the cost of sold goods from Converted Assets to Sold Goods, we transfer the yield from sold goods from Sold Goods to Converted Assets. So we debit Sold Goods, to cancel the credits, and credit Converted Assets. Converted Assets, as we have already seen, is already credited for Goods-in-Process and Finished Goods. Converted Assets now appears as follows:

CONVERTED ASSETS			
Raw Material	1,500	Goods-in-Process	2,205
Fuel	100	Finished Goods	600
Insurance Prepaid	75	Sold Goods	1,700
Wages	1,400		
Rent	200		
General Expenses	450		
Royalties	280		
	(4,005)		(4,505)

It is not now in balance. Apparently more assets have been given up than acquired, for the credits exceed the debits. We know this to be impossible, and therefore it is obvious that our books have not been adjusted to the full facts. The unrecorded fact is obviously that a part of our sales were not mere exchanges of assets dollar for dollar, but brought more value to us than they took from us, and hence increased proprietor's ownership-claim. We now recognize that fact on the books by transferring from Converted Assets its credit balance to Proprietor's Profit-Claim — debiting Converted Assets for \$500 to get the amount off that account and crediting Proprietor's Profit-Claim. We have thus the same result as by the cost-accounting method. We have not anywhere on the books clearly designated the cost of goods sold, to be sure, but we can get it for the purposes of the operating statement by subtracting from the total debits to Converted Assets the sum of Goods-in-Process and Finished Goods as they are



shown above ( $\$4,005 - \$2,805 = \$1,200$ , as it appears on the operating statement on page 64). If there had been a loss, the debits to Converted Assets would have exceeded the credits, and that difference would have been transferred to the proprietor's account as a debit, reducing its credit balance.

**Profit and Loss Account.** As a matter of fact, in many businesses it is common to keep what is equivalent to this converted assets account under a name far different, namely, Loss and Gain, or Profit and Loss. The connection between the titles is not at first glance obvious, and the significance of the latter account is often unfortunately lost sight of. In the first illustration used for Converted Assets, page 73, it is obvious that there is neither loss nor gain, for all costs are replaced in the assets, and no balance is left on the account. The effect is the same as if none of the costs were replaced by assets but were thrown away, and then from an entirely different source, having no relation to the costs, new assets sprang into being. Indeed, it is common in certain types of business to treat all costs as losses, in spite of the fact that they yield new assets by conversion, and to treat all returns through converted assets as gains. That is, no attempt is made to trace each cause to its effect, but costs and returns are treated as independent phenomena, as if without causal connection — just as if, to use an extreme illustration of the point, the things bought for production purposes and all the money spent for intangible things like insurance had been thrown into the sea, and then a lot of new assets of the same value had arrived like manna from heaven. When, however, as we found with our Converted Assets in its last illustration, the entries are not merely for costs but for both costs and selling price, page 76, if the credits (or yield from conversions) are in excess of the debits (or costs of conversions), we get a balance of proprietor's gain, and if the debits are in excess of the credits we get a proprietor's loss. In other words, this Converted Assets account with a debit balance is a loss account (a subdivision of proprietor's ownership-claim), and with a credit balance is a gain account, and hence it may well be called Loss and Gain, or Profit and Loss, and is in fact commonly so called.

**Nominal and Real Accounts.** So far no mention has been made, except in a footnote, of so-called "nominal" and "real" accounts.

The terms "nominal" and "real" are almost universally used in books on accounting, and play an important part in the discussion. We have avoided them here, because they are confusing to novices. Since the terms are in common use we must become familiar with them and their content. Roughly we may say that a real account is one of which the balance represents assets or ownership-claims recognizable, at the time the balance is taken, under the name used in the title of the account — as cash covered by Cash, merchandise covered by Merchandise, accounts receivable covered by Accounts Receivable, accounts payable covered by Accounts Payable; a nominal account, on the other hand, is one of which the balance does not at the time the balance is taken represent assets and ownership-claims recognizable under the name used in the title of the account, though usually the account has previously represented some such asset or claim which has since been actually converted into some other form not suggested by the title of the account, for the books are not kept up to the times except at intervals — as fuel which has gone into goods-in-process or finished goods, still on the books as fuel, or insurance, still on the books as insurance though actually now an integral part of the value of goods-in-process, or wages paid, still on the books as wages though the cash given as wages has actually replaced itself in the goods produced, or a balance on the credit side of Sold Goods, or Sales, which represents proprietor's gain.

**Distinction between Real and Nominal Accounts.** It will be seen that the difference between nominal and real accounts lies in this: if the name of the account indicates the thing as the thing now stands, the account is real; if the thing now exists not in the form indicated by the name of the account in which it still stands but in some other form, as goods-in-process still charged to Wages or to Rent, or proprietor's profit-claim still credited to Sold Goods, or if the thing does not exist at all because it has been exhausted without return, or if it has been converted and is now recorded under its new name, so that it is on the books twice, the account is nominal. If conversion has occurred in part but not wholly, the account is partly real and partly nominal. Obviously when the books are prepared for the balance sheet, care must be taken



that adjustments shall be made in all accounts requiring adjustment, so that all items shall be covered by accounts with names that suggest the actual facts at the date of the balance sheet. Since a balance sheet is always a record of status at a definite moment, the task of bringing the books up to the times, and thus preparing them for the balance sheet and the operating statement, is to see that all assets and ownership-claims are on the books under accounts with names that properly identify them and with amounts that properly represent them. In other words, balance sheet items are real. This means that all nominal items disappear, must disappear; for the very essence of nominal items is that the names of accounts no longer represent the facts. Transfer to Converted Assets, as we have seen, causes them to disappear. This may be put in another way: when assets and ownership-claims have been taken up on the books under names indicating that they are assets or ownership-claims (that is, in real accounts), the nominal accounts lose all significance as representing assets and ownership-claims and become purely statistical, and the net balance of all nominal accounts (all that is left after cancellations) will exactly equal the net assets or ownership-claims taken up on the books in their place: for assets and ownership-claims cannot be on the books in both real and nominal accounts at the same time, and many of them are needed in statistical form during the operating period, for guidance, but in real form on the balance sheet at its close.

**Mixed Accounts.** When an account represents values that have been wholly converted into other forms, it is usually called a "pure nominal" account: but when part of the value remains, as with Fuel and Insurance in our illustrations above, it is commonly called "mixed" — the part which has been consumed is nominal, and the part remaining as an asset or a liability is real. We kept the unconsumed portions on our books under their old titles and showed them on the balance sheet, but transferred the consumed portions to the accounts representing the new assets derived from the old. Wages, Rent, and Royalty, on the other hand, were pure nominal accounts, and so nothing of them remained on the books or went to the balance sheet but they were wholly transferred as costs of the new assets. Hereafter we shall



use the terms "real accounts," and "nominal accounts," and "mixed accounts," with the meanings attached to them above, whenever convenience will be served by their use.

**The Use of Nominal Accounts.** A new fact should now be observed: by the inventory method of finding profits and of drawing up operating statements, the profit or loss at the end of a period can be found directly from the nominal accounts as they stand before they are transferred to Converted Assets or Profit and Loss, if only allowance is made for inventories. It will now be remembered that our Converted Assets account is a device for gathering our nominal accounts so that we may find the net result of the transactions relating to them all, which is our profit or loss. On the debit side of our Converted Assets on page 76 we gathered all the items of costs that had been converted. It will be remembered that of the original Fuel and Insurance Prepaid we took only so much as had been converted, for we subtracted the unconverted portions, or present inventories, from the totals before determining the amounts to be transferred to Converted Assets, that is, we transferred the nominal portions only: but we could not subtract the inventories of goods-in-process and finished goods from any particular costs, for, in the first place, they have resulted from actual conversion, and, in the second place, we do not know of what particular costs these inventories are made up; so in making entries to Converted Assets for these inventories we made allowance not by deducting from the debit side, but by adding to the credit side — as shown by the credit items, in Converted Assets, for Goods-in-Process and Finished Goods. In drawing up our operating statement, however, since these two items have not yet been carried through the sales stage of conversion and therefore cannot yet show a profit, they are subtracted from costs of conversion rather than added to yield from conversion: they are real accounts, cancelling equal value in nominal accounts. We may now list our nominal items as shown below. In observing them, however, we should remember that all the items except the two inventories (subtracted because they are not nominal) actually are nominal, and then observe that they are identical with the items on the operating statement on page 64.

Sold Goods			\$1,700
Raw Material consumed	\$1,500		
Wages	1,400		
Rent	200		
General Expenses	450		
Royalties	280		
Fuel consumed	100		
Insurance expired	75		
Total	\$4,005		
Less			
Goods-in-Process	\$2,205		
Finished Goods	600	2,805	
Net nominal debits		\$1,200	1,200
Profit			\$500

One way of finding profits, therefore, is simply to list all the nominal items, debit and credit, first making sure that all necessary adjustments have been made to carry actual present assets and ownership-claims to real accounts, and then find the difference. If the debits exceed the credits, the result is a decrease in proprietorship — a loss; if the credits are in excess the result is an increase in proprietorship — a gain. This is natural, too, for profits and losses are never made except by converting things — as long as a thing is unchanged it involves no gain or loss; and our nominal accounts represent the two sides of our conversions, cost and yield; and since no part of profit or loss has been transferred on the books during the year from the nominal accounts to the proprietor's account, all profits and losses are still in the nominal accounts at the end of the year ready for the final entries preparatory to the balance sheet and the operating statement. This, however, is only another way of saying that profit or loss can be found from the converted assets account, or the profit and loss account; for these accounts consist under the inventory method merely of the items transferred from nominal accounts in the effort to clear the books of all nominal items and leave only real items, or assets and ownership-claims under properly distinctive names, on the books. Other illustrations of these various methods, with practice in their use, will be observed in connection with detailed bookkeeping method later.

## QUESTIONS AND PROBLEMS

1. Show the fundamental distinction so far as there is any between the cost-accounting method and the inventory method with respect to:
  - (a) finding inventory of insurance
  - (b) finding inventory of finished goods
  - (c) statistical information
  - (d) final profit on sales
2. Just what is the relationship between the operating statement and the converted assets account? From the converted assets account could you construct an operating statement? From the following figures, show as much as you can of both the converted assets account and the operating statement.

	<i>At begin- ning of year</i>	<i>Debits during year</i>	<i>At end of year</i>	<i>Credits during year</i>
Raw materials	5,000	12,000	4,000	
Goods-in-process	17,000		15,000	
Finished goods	3,000		6,000	
Wages		8,000		
Insurance		100		
Taxes		300		
Rent		1,000		
Sales				30,000

3. The following balances are on the accounts of a business.

	<i>Debits</i>	<i>Credits</i>
Proprietor		\$43,000
Notes Payable		4,000
Accounts Payable		10,000
Real Estate	\$41,350	
Notes Receivable	6,400	
Cash	1,516	
Fuel	88	
Rent	250	
Insurance Prepaid	249	
General Expenses	2,740	
Purchases of Merchandise	64,550	
Sales		67,167
Interest		740
Commission		236
Accounts Receivable	8,000	
	<u>\$125,143</u>	<u>\$125,143</u>

There is a liability for general expenses amounting to \$750. Following are the inventories at the end: merchandise \$5,000, interest receivable



accrued \$30, insurance prepaid \$225. Make all necessary debits and credits preparatory to the statements, and construct the operating statement for the period and the balance sheet at its close.

4. The ledger of Jones & Smith, who are equal partners, is on January 31 as follows:

REAL ESTATE		EQUIPMENT	
100,000		2,000	
NOTES RECEIVABLE	ACCOUNTS RECEIVABLE	MERCHANDISE PURCHASES	
20,000	21,000	75,000	
MERCHANDISE SALES	CASH	INSURANCE PREPAID	
46,500	28,000	1,100	
ACCOUNTS PAYABLE	NOTES PAYABLE	INTEREST	
10,000	32,000	260	
WAGES	TAXES	RENT	
300	1,800	5,000	
JONES		SMITH	
77,980		77,980	

Inventories are found to be

Merchandise	\$35,000
Insurance Prepaid	850

Wages are accrued to pay, \$150, and rent is accrued in their favor, \$500. The real estate has depreciated by \$2,000, and equipment by \$200.

Make entries to adjust the accounts to the time, using a loss and gain account. Post the entries to the ledger and draw up a final balance sheet. [The totals of the balance sheet are \$205,150.]

5. Draw up an operating statement for Jones & Smith, of Problem 4.  
 6. Which of the following accounts should you expect to be real and which nominal before adjusting the accounts to the time? Why?

Cash  
 Wages  
 Wages Liability  
 Interest  
 Insurance Prepaid  
 General Expenses  
 Rent  
 Notes Payable  
 Fuel  
 Proprietor  
 Real Estate

7. Can you conceive conditions under which each of the following so-called real accounts might become mixed — cash, real estate, accounts receivable? Explain.

## CHAPTER VIII

### THE CONTENT OF COMMON ACCOUNTS

**Fixing the Content of Accounts.** Nothing can be more important in accounting than a realization of what the totals and balances of various accounts stand for. Detailed explanations are not usually shown on a ledger, and could not be shown without very great labor; hence, since ledger figures must be taken in summary for all reports, like balance sheets and income sheets, they must be classified so that all of a kind can be placed together and inferences can be drawn both from their totals and from the differences between contrary totals. Consequently in laying out a plan for ledger accounts careful provision must be made that all items which are to be used for one purpose in drawing inferences be carried to the same account, and that no other items be carried thither. The titles of accounts should be chosen so as to indicate at a glance (or as nearly so as is feasible without unwieldiness) what items are to be carried to them — that is, their content. The best way to accomplish this is to fix in mind certain general types of content, subdivide these in accordance with the information desired, and then provide an account for each subdivision. When classified information is required in great detail, many accounts must be kept: when information in more or less summary form is all that is needed, a few accounts will suffice.

**Groups of Accounts Reviewed.** We have already had two classifications of accounts: the first gives us asset accounts and ownership-claim accounts, both of which appear on the balance sheet; the second gives us real accounts, which include both asset accounts and ownership-claim accounts, and nominal accounts, which do not appear on the balance sheet but furnish information for the operating statement. Nominal accounts, as we have seen, are kept primarily for statistical purposes, and, though they represent assets or ownership-claims at the time of entry, they are not kept up to the later times in that particular but accumulate statistical information which may or may not at any moment represent exactly (or at all) assets or ownership-claims at that

moment; but on occasion, as necessity or convenience dictates, so much of these statistical accounts as represents assets or ownership-claims is transferred to real accounts and thus gets upon the balance sheet. The only part of nominal accounts that does not get upon the balance sheet, therefore, is the part that has been cancelled by offsetting items, such as payment of wages of salesmen offset in the selling price of the goods, payment of office rent offset by professional charges to clients, earnings from commission sales offset by profits drawn, and cost of fuel offset by value incorporated in goods-in-process and finished goods; so that the only net effect at the time of the balance sheet is the final increase or reduction in the proprietorship and in the assets or liabilities which are the accompaniments of it. As a matter of fact, few accounts get wholly offset, or have their items wholly cancelled, by other accounts in any operating period. Wages, as we have seen, is a good illustration of a nominal account, for the amount chargeable to it is almost instantly converted into assets of another form (or is actual loss or waste and thus a reduction in ownership-claims); but not usually does it happen that the wages account is offset wholly by other accounts and thus disappears without recognition of it on the balance sheet, for usually some wages have been earned since last pay-day, or some could not be paid on last pay-day (because of absence or illness), or some have been paid in advance. Therefore in the process of adjusting for the balance sheet certain items of asset or of ownership-claim are likely to be found in connection with nominal accounts, and the name of the nominal account is likely to be required in the title of the balance-sheet account in order to make its significance clear — as Wages Prepaid, Wages Liability. This is true of virtually all nominal accounts. We may say, then, that if we discuss adequately all balance-sheet accounts, we shall in the process discuss virtually all nominal accounts also. The only kind of exception is a group of accounts commonly called “clearing accounts,” which bring together parts of other accounts having a common relation, and these show the net result of that common relation and transfer that net result to another account or accounts that get ultimately on the balance sheet or the operating statement. Such is Converted Assets used in the preceding chapter. We will



therefore here discuss first balance-sheet accounts, then nominal accounts, and then clearing accounts.

**Other Classifications.** For various purposes, accounts are often classified in other ways than those mentioned above. Some of these classifications merely add subdivisions of the classes given above, and some add entirely new groupings (such as personal and impersonal, of which the first refers to accounts with persons, partnerships, or corporations, and the second to accounts of all other sorts). The difficulty with attempting to give a classified list of accounts is that the various classifications cross one another. For example, assets are divided into four groups with respect to availability or character of usefulness, thus: capital (those which are not expected to be exhausted with one use, like buildings, machinery, etc.), current or working (necessary to day-by-day conduct of business and expected to be quickly converted, like cash, supplies, accounts receivable), deferred or prepaid (like advance payments for goods to be delivered later, and prepaid insurance), and accrued (properly belonging to the business but not yet due and not yet charged to the persons who should ultimately pay, like claims for interest already earned but not yet demandable). Assets are also classified on the entirely different basis of external character, thus: tangible property (in which the value inheres in the thing itself, like real estate, cash, supplies), intangible property (in which the value lies in certain rights and expected return from those rights, like copyrights, patents, and good will), and claims against others (of which some may be evidenced by certain tangible documents — like notes receivable and bonds, the value lying not intrinsically in the document but in the claim which it evidences — and others may be without formal acknowledgment, as rent accrued, accounts receivable, commission accrued). To classify accounts completely would require, for example, that under virtually each group of the first classification should be three subdivisions to cover the three groups of the second classification. In the following discussion, therefore, no attempt will be made to attach to each account the various labels that might be applied, as, for example, “impersonal, accrued, claim” to sums ultimately collectible but not yet due for services in selling a house on commission, in the account Commission Ac-

crued. In each case such description will be given of the usual content of the account that its place in any scheme of classification should be evident. The general plan of classification for the paragraphs following may be tabulated briefly:

Asset Accounts	(The discussion will include such comment on each as will make clear the relation between the asset account and the operating or nominal accounts with which it is naturally connected)
Contra Accounts	(The discussion will show the purpose and use of certain accounts that represent deductions from assets, but are commonly reported on the ownership-claim side of the balance sheet in spite of the fact that they do not represent claims of any sort, and <i>vice versa</i> )
Ownership-Claim Accounts	(treated similarly to asset accounts)
Nominal Accounts	(reviewing the nominal accounts already discussed in connection with assets and ownership-claims, and adding such further discussion of them as is necessary to show their content and treatment)
Clearing Accounts	(showing their relation to both real and nominal accounts)

Accounts primarily for corporations are not discussed here but in Chapter XVI, for it is deemed wise for the reader to become thoroughly familiar with routine matters applicable to virtually all businesses before he invites confusion by studying special accounts.

**Flexibility of Ledger Titles.** Inasmuch as the names we have so far used as titles of accounts have been chosen largely to provide clearness of exposition, they have not always been in accord with titles commonly used in business. If we are to be able to interpret financial statements of businesses other than our own, we must know the common titles of business and the significance of the accounts to which they are attached. No two businesses can ever be in all details exactly alike, however. Since businesses depend largely for policy upon accounting information, no two businesses can have identical accounting needs. Careless choice of accounts and careless handling of the content of them yield either vague or misleading statements, and sometimes overem-



phasize insignificant facts and minimize vital facts. Therefore the selection and the determination of the content of accounts is a serious matter to be meticulously performed by each business enterprise; and though wide departure from general practice in the content of common amounts is likely to lead sooner or later to misunderstanding, details and titles for particular needs may have great flexibility. No attempt is made here to cover a large variety of alternatives in the choice of titles or the selection of content for accounts. Yet certain principles of classification are so important that they should be illustrated with the greatest care, and when the best illustrations are found in accounts that are not altogether common such accounts are used for illustration here. In the pages following, for example, six accounts are discussed for interest alone: Interest Accrued, Interest Prepaid, Interest Earned, Interest Accrued Liability, Interest Unearned, Interest Charges; each has its importance as an illustration of a principle, its use in actual business, and its place on a balance sheet or an income sheet; but few business houses would keep them all at once or make entries to most of them except at the times of adjusting the books, for short-cut methods are available. Since the short-cut accounts are more difficult to understand than the accounts named above, however, they will not be discussed until Chapter XIV, where they will show again the flexibility of book-keeping methods.

#### ASSET ACCOUNTS

**The Impermanence of Assets.** In noting a statement of what an account is meant to contain, one should always remember that few things in this world are permanent — that no business property remains long in one physical condition or of one value. The mere lapse of time causes changes in condition because of “wear and tear,” of “moth and rust,” of weathering, of changes of fashion or custom which affect either it or the product or services which it helps to provide, of necessary compensation for waiting to collect one’s dues. Only constant entry for the effect of these changes, as well as entry for transactions with other people, could keep accounts true to the conditions which they are meant to record. Any statement about the content of an account, therefore, is subject to



the qualification "when brought up to the time." This applies to the discussion following. The accounts treated under the heads "asset accounts" and "liability accounts" are "real" in the sense that when adjusted for the balance sheet they represent assets or ownership-claims recognizable under the name used in the title of the account, but at all other times certain elements of them are almost sure to be nominal, that is, converted to other forms or lost or destroyed altogether.

**Cash.** The most common of all accounts is Cash. It is debited for all receipts of money (including checks, money orders, and sometimes sight drafts), and is credited for payments of the same sorts of money; hence the balance represents cash available for use (either on hand or in bank). It should never have a credit balance, of course. If no error has been made, a credit balance could indicate only an overdraft on the bank account; but this constitutes a loan from the bank (if the check is honored, and it is not a payment if the check is not honored), and should be entered as a loan from the bank, thus increasing the cash debits and correcting the credit balance. In one respect the cash account is unique: it stands both for value and for quantity. If, for example, our cash balance is \$1,001 we know that we have on hand one thousand one dollars, worth one thousand one dollars. Every other asset account expresses a value more or less problematical, for all accounts are expressed in dollars and yet only cash is actually in dollars; the other values will show only on the conversion into dollars, and hence the dollars attached may be more statistical than real.

**Petty Cash.** It is customary nowadays to make as many payments as possible by check, for that eliminates the risk of handling and guarding currency. Some expenditures, however, need to be made in currency, either because of their pettiness or because currency is preferred by the person to whom payment is made. A petty-cash fund is kept, therefore, out of which such payments may be made, and the cash is recorded in an account called Petty Cash. The handling of this account will be discussed fully in Chapter XV.

**Merchandise—As Inventory Account.** On the balance sheet Merchandise indicates owned goods on hand for sale, and should never include any other sorts of purchases. It should not include

goods held by the business to be sold for some one else on consignment, for title to the assets does not then vest in the business and the assets should not appear on its balance sheet. Purchases of raw material and supplies intended for manufacture, even though intended for ultimate sale, should not be carried in this account. It may include goods manufactured by the business, but these are preferably carried in an account with a more expressive title, like "Finished Goods," or "Manufactured Goods" — especially if the business also sells some goods that it buys ready for sale. The usual rule for valuation is "cost or market, whichever is lower." The reason for this is discussed on page 285. In any case one should realize that the billed price or quoted price is often not the cost, for often discounts are offered for early payment of bills. The natural price of goods is the price after all offered discounts have been deducted, for that is what the goods can be bought for. Whether the discounts have actually been taken or not, the amount of offered discount should be deducted from the gross inventory; otherwise the business with inadequate capital, unable to take its discounts, will have the highest inventory for identical goods, and this is absurd.

**Merchandise — As Mixed Account.** In counting houses in which little use is made of accounts except for occasional knowledge of assets, of liabilities, and of profits, Merchandise is carried as a mixed account. It begins the period with a debit of the balance brought over from the period before, the opening inventory mentioned above. Whenever purchases are made it is debited at cost, and when any sales are made it is credited for the sale price. The balance of the account, then, has no particular significance; for it does not represent merchandise on hand, but rather merchandise on hand plus or minus the loss or profit respectively on what has already been sold. If, for example, we begin the year with an inventory of \$20,000, buy merchandise for \$120,000, and make sales of some of that merchandise for \$130,000, the balance on the account is \$10,000. It may happen that the inventory of merchandise at the end of the period is not \$10,000 but \$25,000. In that case, what we sold cost only \$115,000, and the transaction yielded a profit of \$15,000, as shown below in a convenient form for reporting such items.



Sales		\$130,000
Inventory at beginning of year	\$ 20,000	
Purchases	<u>120,000</u>	
Cost of goods handled	\$140,000	
Inventory at end of year	<u>25,000</u>	
Cost of goods sold		<u>115,000</u>
Gross profit on sales		\$15,000

If one is not eager for statistical information about one's business, this mixed merchandise account will serve, for it produces correct results; but if some sales and purchases were returned, the ledger could not distinguish between sales and returned purchases, for both would be credited to Merchandise, or between purchases and returned sales, for both would be debited, and statistics compiled from the account might be worse than useless. For this reason a better way is to cut up Merchandise into several accounts and then combine them into a clearing account, as will be discussed on page 131. The balance which it shows as a balance-sheet or as a mixed account is identical with the figure for inventory contained in it as a clearing account. The method of handling the mixed merchandise account so that it will show gross profit or loss on the ledger account itself is discussed in Chapter XIV.

**Shipments.** When we ship goods out to be sold on commission, we hold the consignee responsible for the care of the property, but he is not responsible for its money value — that is, he is not actually in debt to us. So when goods are shipped a debit should be made not to Accounts Receivable, but to a shipment account for all the costs of the shipment — with a credit to merchandise for the cost of the goods shipped, to cash for cash expenses incurred, etc. The total debits then represent costs incurred for goods shipped for sale on consignment. Then when the commission agent reports the goods sold, a credit is made to the shipment account, with a debit to Accounts Receivable or Cash. The balance on the shipment account when all the goods have been sold is the gain or loss.

**Notes Receivable.** When formal acknowledgment of early-maturing debt is desired, a promissory note is requested or a draft is drawn. Since both notes and drafts are negotiable, the possession of such formal acknowledgment enables one to realize



on claims without waiting for their maturity, for they can be sold. They should therefore be carried in an account separate from other claims. The possessor carries them in Notes Receivable, or Bills Receivable. Notes are promises to pay and drafts are orders to pay; but when drafts are accepted they become also promises to pay. The distinction between them, and the details of transactions with them, are matters of business routine and not of accounting; but they must be understood by any one who is to handle the accounts for them.<sup>1</sup> When notes or drafts which constitute claims against others are received, Notes Receivable, or Bills Receivable, is debited; when such notes or drafts are paid, in whole or in part, the part paid is credited to this account. If a draft ordering some one else to pay us is sent to us, and the drawee accepts it, we debit Notes Receivable and credit the sender; if the drawee refuses to accept it, it is waste paper and no entry is involved. If we draw a draft in our own favor and the drawee accepts it, we debit Notes Receivable and credit the drawee. If he does not accept it, we need no entry. Drafts that we draw on others in favor of third parties are not Notes Receivable to us, for they are not collectible by us. If they are accepted, we debit the payee and credit the drawee. Drafts that we accept are treated under Notes Payable. Care must be taken not to include inadvertently in this account things which it is not meant to cover. Though it is often called "Bills Receivable," from the fact that the title originated in the days when drafts were called "bills" in this country as in England, it is not usually meant to cover sums receivable on bills for merchandise sold on charge account unless a promissory note or draft is given. It is not commonly intended to cover interest on interest-bearing notes or drafts, but "face" only. One objection to incorporating in this account the interest accrued is that the amount of interest is daily changing, of course, and identification of an entry with the note is difficult when the entry does not tally with any figure appearing on the note itself; hence the face only, or that portion of the face which is paid, is carried to this account, and the accrued interest is carried to an account provided specifically for interest.

<sup>1</sup> For the assistance of those not familiar with financial documents a brief discussion of drafts will be found in Appendix A, page 411.

**Notes Receivable Discounted.**<sup>1</sup> In the paragraph above we observed that Notes Receivable is credited when notes or drafts are paid. This is not the same as saying that the account is credited when the notes or drafts are sold; for we do not by selling a note or draft make sure that we get our money and pass on to the buyer the risk of failure to collect what it calls for. When such an instrument is sold, the seller endorses it, and that endorsement guarantees its collectibility (that is, binds the endorser to pay if the maker or acceptor fails to pay). This constitutes a liability — contingent, to be sure, but so often and so unfortunately serious that because of it many firms have gone into bankruptcy with heavy loss to their creditors. The books do not tell the truth if they neglect it. When a note or draft is disposed of (other than by payment), therefore, the credit should be not to Notes Receivable as if we had sold the note without guarantee, but to an account which will show the contingent liability. This leaves Notes Receivable untouched, and for a reason. We have no longer the note or draft in our possession, but it may come back into our possession; that is, it is an asset to us contingent in just the same degree of probable reality that the liability on the endorsement is contingent. If we must pay the amount called for by the note, we will get back the note. The contingent asset and the contingent liability are equal. If we meet the note when due, it will be because we got the money for it in advance, and we shall be no worse off than if we had kept it from the beginning — we shall be merely returning what we borrowed (plus interest, of course). So at the time of selling a note or draft (commonly called “discounting”), one should debit Cash and credit Notes Receivable Discounted. If then the payer fails to pay, the seller meets his liability with cash, and reverses the entry for the borrowing: he debits Notes Receivable Discounted and credits Cash. Things are then as they were before (neglecting, for the moment, interest): that is, the note is in hand and is included in Notes Receivable as it has been all along. If, on the other hand, the payer of the note pays it at maturity, both the seller’s con-

<sup>1</sup> It will be observed that this is not an asset but a liability account. It is so closely tied up with Notes Receivable, however, representing temporarily a substitute for credits to that account, that it cannot be discussed independently, and is consequently placed here.



tingent liability and his contingent claim on the note are ended and they should no longer stand on the books. He will now debit Notes Receivable Discounted and credit Notes Receivable, thus removing both. He will know that his liability has ended, for under the law of endorsement an endorser is released from liability if he is not immediately notified, by formal "notice of protest," of the failure of the maker of a note to pay. So if he hears no word after a reasonable time for notification, he knows that either the note was paid or his liability has ended by lapse.

**Notes Receivable Doubtful.** When notes and drafts previously discounted have been taken up, because of liability on endorsement, they are presumably of doubtful value — else the payers would not have defaulted in payment. Since this puts them at once into a different category from notes which have not yet become due, it is well to transfer them from Notes Receivable to Notes Receivable Doubtful. This is accomplished by crediting the former and debiting the latter as soon as the notes are taken up, that is, at the same time with the entry debiting Notes Receivable Discounted and crediting Cash. If such notes are finally paid, Notes Receivable Doubtful will be credited. If not paid, the amount will be charged to Losses from Bad Debts and credited to this account. Endorsed notes which have not been sold or discounted, if they prove uncollectible, will be protested by the business, of course (so as to hold the endorsers liable). They should similarly be transferred to this account. Notes without endorsers, too, when proved uncollectible should be transferred to this account unless hope of collecting them is at once abandoned, in which case they should be written off and a debit should be made to Loss from Bad Debts.

**Mortgage Notes Receivable.** When a note is secured by the pledge of real estate, so that if the note is not paid the property may be taken and sold to supply the necessary money for payment, the notes may be carried in a special account for that purpose. It is desirable to carry them in such an account, for usually such notes have a long term, perhaps several years, and hence are not so quickly converted (unless by sale) as ordinary commercial notes and drafts. The mortgage itself does not need recording on the books of the holder in any account, for it is



wholly contingent and the contingency is sufficiently indicated in the title of Mortgage Notes Receivable. If, on the other hand, the mortgage is foreclosed and the property is taken, the property must be entered, of course. This may involve trust accounts, which we need not discuss here.

**Accounts Receivable.** Accounts Receivable is usually intended to cover claims to payment for merchandise only. When goods are sold on account, Accounts Receivable is debited for the amount of the sale; and when payment is made, the account is credited. If a note or a draft is given as acknowledgment of the debt, the account is paid; that is, though the debt remains, it is now registered in another account, Notes Receivable, and should be cancelled here. The entry debits Notes Receivable and credits Accounts Receivable. As a matter of fact, all accounts receivable are indexed under customers' names, as we shall see later, and all sales items which we wish indexed should go through this account for record. So if we wish the account to give us maximum information we may enter to Accounts Receivable not only amounts due on account, but certain sales to customers for goods which they immediately pay for in cash, though, of course, we must credit the accounts also for the payments. Otherwise we shall not have indexed record of those to whom we make cash sales, perhaps our best customers, and hence those with whom we wish to stimulate sales. Commonly the amount shown as a balance on Accounts Receivable is an overstatement of the amount actually receivable, for in many businesses discounts are offered for early payment of bills and such discounts are widely taken. The accounting method of showing recognition of this fact is discussed in connection with contra accounts later in this chapter. When such discounts are given Accounts Receivable is credited for them as well as for the cash, for the amount is no longer an asset. Accounts may be opened, similar to Accounts Receivable, for amounts owed for services. Such an account may be called "Receivable from Clients," or merely "Clients."

**Accounts Receivable Doubtful.** A credit manager watches with great care the collection of accounts receivable, and to facilitate this often wishes to segregate accounts receivable which have run for a specified time or for any one of many reasons are deemed

of doubtful collectibility. Such an account is Accounts Receivable Doubtful. To shift an item from Accounts Receivable to Accounts Receivable Doubtful, the latter is debited and the former is credited. If a doubtful account is finally given up as bad, Accounts Receivable Doubtful is credited and Losses from Bad Debts is debited. If the account is paid after it has been written off as bad, justice to the customer requires that the account be put back on Accounts Receivable, whence it was originally taken, so that there the record may show that it was finally paid.

**Goods-in-Process.** As we have already found in Chapter VI, all the costs of manufacturing goods for sale can be carried through Goods-in-Process. This account, however, unlike those just discussed in this chapter, does not have entries made to it whenever any change takes place in the status of what it represents, for changes in goods-in-process take place in any large factory not only every minute but in a hundred places at once. It is debited for the costs that have gone into the product; but those debits are made only at convenient or necessary intervals. It follows, therefore, that except when the books have been adjusted for the balance sheet, the debits to this account may or may not represent all the costs. The account is credited, as we saw in Chapter VI, for the cost of finished goods sent from the shop or factory to the warehouse or salesrooms. When the account is adjusted — that is, is complete to the time — its balance represents the cost of goods at present in the shop or factory uncompleted, that is, the manufactured cost of their uncompleted state. In Chapter XXII we shall see briefly how these figures are obtained. We shall see also later in this chapter that Goods-in-Process is a clearing account, and that the balance which it shows as a balance-sheet account is derived from it as a clearing account.

**Raw Material.** To Raw Material go all purchases of principal materials for manufacturing. By the cost-accounting method, when materials are requisitioned for immediate use in manufacturing, this account is credited and Goods-in-Process is debited for the cost of what is requisitioned; the balance of the account indicates the cost of raw material in the storeroom. Separate records should be kept for receipts and issues of each type of raw material, so that quantities bought, consumed, and on hand, may



be watched. The sum of the balances of each kind should equal the balance of the general account. Physical count should be taken at convenient intervals (preferably when the stock of each kind of material is low) in order to make sure that error has not been made and loss by waste or theft has not been suffered. When purchases have been made at different prices and a new purchase is made before the old stock is exhausted, it is customary to issue at each purchase price in turn until as many have been issued at each price as were purchased at that price — so that both the oldest supply and the oldest price are utilized in full before a new supply and a new price are drawn upon. By the inventory method, no credits are made currently to Raw Material (except, of course, for materials returned or diverted to other uses than manufacturing), but at the end of the period the inventory is taken and the difference between the net debits (inventory at the beginning, plus purchases, minus returns or diversions) and the inventory at the end is the assumed consumption in manufacturing (though it may include quantities lost track of, lost by breakage and waste, and lost by theft). When this is credited to this account and debited to Goods-in-Process or its substitute, the balance is the inventory for the balance sheet; or, if we prefer to put it this way, we may say that when the inventory at the end is credited to this account, the balance is the consumption to be transferred to Goods-in-Process. To this account is sometimes carried freight and cartage on purchases, but these are preferably first carried to a special account, for statistical record, and then transferred to this account or to Goods-in-Process.

• **Supplies.** In general, Supplies is intended to cover articles destined for quick use and expected to be consumed in that use. Sometimes the articles are akin to raw materials, as auxiliary materials, and are expected to go into manufactured goods, as eyelets in a shoe factory and ink in a printing establishment. In that case they should have a separate account, as Material Supplies, or even stand in individual accounts. Similarly we may have Office Supplies, Janitor Supplies, Power-House Supplies, Storeroom Supplies, Salesroom Supplies. In a large business, supplies may cost many thousand dollars a year, and as they are peculiarly subject to carelessness and waste by irresponsible employees, they



should be watched carefully; this sometimes involves a separate account for each variety of supplies. Many kinds of supplies, though often not thought of as supplies, are commonly so treated. Among accounts for these are Fuel, Postage, Stationery and Printing, and Wrapping Paper and Twine. By the cost-accounting method, Supplies should be credited for consumption; and the accounts representing the values into which supplies have been converted (like Goods-in-Process, Finished Goods, Sold Goods) should be debited; but this would involve so much detailed record keeping that it is virtually never done except for manufacturing supplies, and the inventory method is used. Either of two ways of looking at the account may be adopted, for they come to the same thing in the end: all debits to Supplies may be thought of as representing assets, or balance-sheet items, but needing adjustment at the end of the period for consumed supplies, which is provided by debiting Goods-in-Process, Sold Goods, Converted Assets, or what not, and crediting this account; or all debits may be thought of as costs or losses, depletions of proprietorship, but adjustable at the end of the period for unconsumed items, the inventory. The latter is the commoner method, and treats all supply accounts as nominal.

**Furniture and Fixtures.** No uniformity of practice is found in names applied to accounts representing assets intended for long-continued use, over several earning periods. In manufacturing establishments, Furniture and Fixtures usually covers office furniture, such as desks, safes, tables, chairs, cabinets, etc., but no manufacturing equipment. In mercantile establishments, it may include counters, show cases, show-window attachments, etc. — i.e., selling as well as office facilities. In good accounting, distinction should be made between things which serve office purposes and those which serve manufacturing or selling purposes. It may be worth while, therefore, to subdivide this account according to the kinds of service rendered. In any case, the account is debited for purchases, and is credited for depreciation,<sup>1</sup> for abandonment of worn-out furniture and fixtures, for recoveries of insurance on property destroyed, and for sales (in no case at more than the value at which the property concerned stands on

<sup>1</sup> A substitute for this credit is discussed on page 107.

the books at the time). The balance of the account when it has been adjusted to the time is the balance-sheet item.

**Equipment.** When mechanical facilities are provided for any part of a business other than manufacturing, their value is usually carried in Equipment. Such are typewriters, adding machines, and dictating machines, in an office, shoe-repair machines in a shoe store, scales and trucks in a storeroom, and horses and wagons or motor trucks in the delivery department. Sometimes, however, this account overlaps what we have treated above as in Furniture and Fixtures and below as in Machinery. The account is debited for purchases and is credited for depreciation,<sup>1</sup> for abandonment, and for sales, similarly to Furniture and Fixtures.

**Machinery.** Tools, machine tools, and machines, are commonly carried together in one account, Machinery, though it is well to separate them because of the different inevitable rates of depreciation to which they are subject. Belting, shafting, pulleys, etc., are often included in this account, though properly they should be carried separately. The account is handled similarly to Furniture and Fixtures, and to Equipment; because of the common magnitude of the values involved, however, the proper handling of depreciation is even more important. Depreciation forms the subject of Chapter XVIII.

**Power Plant.** Since the production of power is a function which, though connected with machinery, may often be operated independently (to run other machinery than that for which it was primarily installed), and since power may often be engaged from outside sources of supply, accounts should make possible the determination of costs of power. This involves a knowledge of what is tied up in power plant. So the equipment of the power plant should be carried in a separate account, Power Plant, or in two accounts, Engines, and Boilers. It is treated similarly to the account just discussed.

**Plant.** When various kinds of permanent facilities are not differentiated but are carried in one general account, Plant serves this purpose. Sometimes even further consolidation takes place, and we find Real Estate and Plant as one account.

**Real Estate.** Since real estate consists of land and buildings,

<sup>1</sup> A substitute for this credit is discussed on page 107.



with their appurtenances, and of nothing else, it properly should be carried in an account distinct from all others; for the economic laws affecting values, including those of depreciation and appreciation, affect this field somewhat differently from others. Sometimes land and buildings are carried separately from each other: land may appreciate while the buildings depreciate. Usually a separate account is kept for each parcel of real estate. Real Estate is debited for purchases at cost and is credited for depreciation,<sup>1</sup> for recoveries of insurance on property destroyed, and for sales. Care must be taken, however, when sales are made, that credit is not given to this account for more than the amount at which the property sold stands on the books at the time of sale; for, if this is done, the balance of the account, which is supposed to represent the value of what remains, will be reduced erroneously by the amount of the profit: if one-half of property on the books at \$50,000 is sold for \$30,000, the profit is \$5,000, and the balance of real estate is \$25,000; but if the sale is credited to Real Estate at \$30,000, the balance of the account will be only \$20,000. The correct entry will credit Real Estate only \$25,000 and proprietorship \$5,000 — in some account to be discussed in Chapter XVII.

**Bonds Owned.** Since bonds, which are in principle only interest-bearing notes of corporations, are more formal than notes, are better protected from forgery and counterfeit, run usually for longer terms, and are commonly more readily salable (because their value is better known through the publication of market sales), they should be carried in a separate account. Since the face values are of standard varieties (usually multiples of \$100), and the price paid for bonds bought is likely to be either more or less than the face (for reasons to be discussed later), it is usual to debit Bonds for the price paid rather than for the par or face value. The account is credited for sales at the book value of the bonds sold (as described for real estate above). The detailed handling of the bond account involves interesting mathematics that need more discussion than can be given in this chapter, and will be found, in connection with other similar and important things, in Chapter XXI. Sufficient for our purposes here is a

<sup>1</sup> A substitute for this credit is discussed on page 107.



realization that the debit balance on Bonds is supposed to represent the bonds of other companies held by the business on whose books the account appears. Since the value of each bond is dependent on many circumstances, some of which hinge upon the circumstances of the company issuing them and some on the text of the bonds themselves (e.g., whether they carry mortgage provision or not), each issue of bonds should stand in an account by itself.

**Stocks Owned.** Stock in other businesses often forms an appreciable part of the assets of an enterprise. Corporations, as we shall see later, are owned not by individuals, as are partnerships and single proprietorships, but by stockholders who do not exercise direct individual control. These stockholders hold certificates of stock which entitle them to the distributed profits of the corporation and to the distributed assets in case of dissolution. Valuable stock is therefore a source of earnings, like real estate, machinery, and bonds, and represents actual assets in the custody of the company issuing the stock certificates; and if the company issuing the stock is well known, the certificates have an easily ascertainable market price. Usually a separate account is kept for each kind of stock owned; for the values of stocks vary widely, even with the same par or face value, because of varying circumstances connected with each. The account for each is debited for the cost of stock bought, and should be credited for each sale at the book figure at the time of sale. Any gain should be credited to proprietorship in an appropriate account to be discussed in Chapter XVII. If the owner of the stock is itself a corporation, it should not include in Stocks Owned any stock issued by itself, but should carry such stock in Treasury Stock or some other account discussed in Chapter XVI.

**Funds.** Oftentimes property is set aside for a special purpose, and is represented in a fund account. Funds may consist of bonds and stocks, or of cash, for example. If a business has a large expenditure to make at some future time, it may provide a fund out of which ultimately the payment will be made. Many bonds are paid out of such a fund, called a "sinking fund." Each year during the life of the bonds the fund is increased, and at the time of maturity it may be large enough to repay the money bor-

rowed on the bonds. The term "fund" should not be carelessly used: it is preferably used only for property set aside for a special purpose. A fund account is debited for property put into the fund and credited for property taken out. It is well to show by the title of the account the nature of the property in the fund, as with Sinking Fund Cash, or Sinking Fund Bonds.

**Interest Accrued.** A number of common business transactions are recurrent or even continuous in their nature, rather than occasional, and require, as we have seen, special provision. Interest given as compensation for the use of money is an illustration. It is always determined by applying a rate or percentage to a principal sum for the time of the loan; and so it is constant and unvarying day by day as long as the terms of the loan remain unchanged, even though it may be paid only on occasion — at the beginning of the term of borrowing, at the end, or occasionally during the term. Both the status of the business, as shown by the balance sheet, and the earnings and expenses, as shown by the operating statement, are affected by the accrual of interest whether the interest has actually been paid or not. If we lend \$1,000 on December 16 at 6%, on December 31 accrued interest to the amount of \$2.50 will have accrued in our favor,<sup>1</sup> even though the loan may run six months and interest on it may not be due or be paid until the debt matures. Our claim to that amount is an asset; and if we adjust our books to that day we may debit Interest Accrued and credit Interest Earned (a subdivision of proprietor's gain). It should be noted that Interest Accrued represents the asset, and Interest Earned represents the ownership of that asset. When the interest accrued is paid, Interest Accrued is credited and Cash is debited, of course. By the time payment is made, however, more interest is likely to have accrued. For this accrual another entry may be made; or, to save labor, the new accrual may be omitted, and when Cash is debited a credit may be made to Interest Accrued for the portion already entered and to Interest Earned for the new portion. Thus we get both the asset at the time of the balance sheet and the measure of interest earned for the period. Interest accrued is constantly growing larger until paid. Interest accrued is not always earned, however: it

<sup>1</sup> Information about interest is given in Appendix B.



may be bought. If we buy a bond on June 1 that bears interest payable January 1 and July 1, we buy five months' accrued interest, and we must debit Interest Accrued and credit Cash. Then of the interest payment on July 1 only the interest for June will be earned. On July 1 we can debit Interest Accrued and credit Interest Earned for the June interest, and then debit Cash and credit Interest Accrued for the six months' interest; or we can debit Cash for the six months' interest, and credit Interest Accrued for the five months' interest and Interest Earned for the June interest. Statistically the former is better, and more systematic, but the latter is shorter — if one does not forget what is what and make a blunder.

**Interest Prepaid.** Akin to Interest Accrued, though in some senses reversed, is Interest Prepaid. This account represents not an asset to come in as (presumably) cash, but a right or privilege for which (presumably) cash has gone out. Whereas interest accrued grows constantly larger until paid, interest prepaid grows constantly smaller until expired. The asset which it represents is the right to use other people's money temporarily in our enterprises, and the fact that we are willing to pay for the use of the money shows that we deemed that right to have value — else why should we have given a perfectly good asset, cash, in exchange for it? Indeed, even if we make foolish use of the borrowed money and earn nothing with it, that fact does not destroy the right as an asset; for the right which we have paid for is to use the money, and such right has a universally recognized market value, and to squander that privilege later is a loss of the later period but cannot work retroactively and destroy the value of the right in itself at the time when it was prepaid. Prepaid interest is of two sorts — that which is paid in advance and in addition to the amount written in the face of the note, draft, or other evidence of debt, and that which is deducted from the face of the note, or other evidence of debt, and never loaned. The last is called discount, but is identical in nature with interest and is carried in the same account. If a note for \$1,000 does not bear interest and is due two months from to-day, our bank will give us for it if we discount it not \$1,000, but \$1,000 less the interest (at say 6%) on \$1,000 for two months, or \$990. We are in effect,



then, paying interest in advance, \$10 for the use of \$990 for two months. Our entry will be properly a debit to Cash for \$990, to Interest Prepaid for \$10, and a credit to Notes Receivable Discounted (or Notes Payable if the note is one of our own making) for \$1,000. As time goes by, the prepayment expires, and whereas it was \$10 at the beginning, at the end of one month it is only \$5. This expiration is of course the result of conversion of assets; and Interest Charges (one statistical subdivision of Converted Assets, or Goods-in-Process, or Loss and Gain) is debited and Interest Prepaid is credited.

**Rent Accrued.** When rent has accrued in favor of a business at the time of a balance sheet, it must show as Rent Accrued. At the time of debiting this account, Rental Earned (a subdivision of proprietor's gain) is credited. When rent previously entered as Rent Accrued is paid, this account is credited; but when rents not debited to this account are paid, this account is not needed, unless for statistical completeness, for the entry is simply a debit to Cash and a credit to Rental Earned.

**Rent Prepaid.** We have just seen that Rent Accrued is handled similarly to Interest Accrued, with Rental Earned allied to it and to Interest Earned. The same parallelism applies to Rent Prepaid and Interest Prepaid, and to Rental Charges and Interest Charges.

**Commission Accrued.** When one business sells goods on behalf of another it is given usually a percentage of the selling price as compensation. If such compensation has been earned but not received, it should appear on the balance sheet as Commission Accrued. The credit is to Commission Earned. When commission entered as Commission Accrued is paid, this account is credited; but payment made to the business without previous entry of accrual is credited directly to Commission Earned.

**Insurance Prepaid.** Insurance is usually paid in advance for a term longer than a single earning period, and therefore when paid it is usually debited to Insurance Prepaid. As it expires this account is credited and Insurance Charges (a subdivision of Converted Assets, or Loss and Gain) is debited.

**Wages Prepaid.** The account for prepaid wages is akin to the other accounts for prepayments. As the prepayments expire, the

account is credited, and Wages (a subdivision of Converted Assets, Goods-in-Process, Loss and Gain, or whatever the case may indicate) is debited.

**Other Accrued and Prepaid Assets.** Other kinds of things than those mentioned above may be accrued or prepaid, and the accounting will be similar to that described above. At entry for accrual, bringing the books up to the time, the account for the accrued asset will be debited and the appropriate earning account will be credited. At payment, the portion of the earning which has already been entered as accrued is credited to the accrual account, and the rest is credited directly to the earning account; or the new accrual may also be entered to the accrual account, crediting the earning account, and then the cash payment will be credited to the accrual account. Prepayments are given reverse treatment. When payment is made, the prepayment account is debited; as time passes and adjustment becomes necessary, the prepayment account is credited and the account representing the conversion (or loss if the prepayment is wasted) is debited. Great caution must be exercised in determining what has been or remains still prepaid, for any exaggeration means false security and overstatement of profits. An extended advertising campaign, for example, may have its effect over several earning periods, and a large part of the cost of the advertising may be deemed unexhausted at the time the balance sheet is taken: in that case, though it is intangible, many would carry it in Prepaid Advertising. Unless one is sure of one's ground, however, conservatism frowns on this. It is easy to name advertising campaigns that, though of comparatively short duration, had effect in increasing sales over many years; but this is after the event: it was not necessarily wise to assume in the beginning that the campaign would continue to yield results after expenditure should stop.

**Rights.** Often assets consist largely not of things or of claims to things that are, but of claims to things that are to be. Patent rights are a good illustration. They enable the owner of a patent to control the sale of an article, and therefore to fix its price or even prevent its manufacture. If by such control he can insure higher profits than without it, the possession of the right is

a source of income and an asset. What is paid for the right (the cost of obtaining the patent, or its purchase price if bought from another) is accordingly debited to Patent Rights. Good accounting practice, for reasons to be given later, does not sanction debiting the account for more than cost. The account is credited for shrinkages in value — from gradual expiration of the patent, from decline of earning from it, or from discovery of overvaluation; and conservatism is the part of wisdom. The mathematical method of finding the value of a patent is discussed in Chapter XXI. Similar to patent rights are copyrights, leaseholds, trademarks, royalty rights, franchises, and good will. They will be discussed more fully in Chapter XXI.

**Suspense Accounts.** Occasionally it happens that a business cannot at once determine the disposition of some property acquired and dislikes to give it even temporarily a wrong name; yet it is desirable for the acquisition to be in some way recorded on the books. For this purpose Suspense Account, designating uncertain disposition, is serviceable. This may occur on tentative balance sheets, but, when possible, final disposition should be determined and entered before final balance sheets are prepared. A qualifying term may well be added to the title of the account, as in Real Estate Suspense. Such an account is often used also for doubtful receivables, both notes and book accounts.

**Contingent Assets.** It is not uncommon in business to surrender property to another as a pledge for the performance of an act. Resumption of such property is contingent on the performance of the act, for in case of failure of performance the property is subject to forfeiture. It is important that contingent items be distinguished from others to which title is clear; for otherwise we may think that we have available more property than we actually have, or we may not in formulating our policy sufficiently recognize the possibility of forfeiture. Among such contingent assets are notes receivable already discounted, as mentioned on page 93; but in that case the contingency is indicated by the liability account rather than by the asset account. Another example is cash deposited with a city treasurer by a contractor as a pledge for fulfillment of his contract to build a bridge within a certain time, covered by Cash Deposited as Pledge on Contracts.



## CONTRA ACCOUNTS

**Allowance for Depreciation.** In connection with several asset accounts we noted that depreciation of the property required a reduction of the value as shown by the books. Statistically this may or may not be advantageous. Sometimes we are concerned not only with the present value, or the portion of original cost still remaining, but with the actual original cost, and we wish that original cost to remain on our books without change. We at the same time wish to show the exhaustion of that value by use or discontinuance. Both purposes can be served by establishing a new account to measure the exhaustion of original value, and by remembering that the story of the property is now told in two accounts instead of one and that the remaining value lies in the difference between the two accounts. Such an account is Allowance for Depreciation of Buildings (sometimes called Reserve for Depreciation of Buildings). This Allowance for Depreciation of Buildings, though it has a credit balance, does not represent an ownership-claim, but merely measures the overvaluation of assets. To use a homely figure of speech, the asset account may be said to measure the diameter of a doughnut, and the allowance account to measure the diameter of the hole; so that the substance of the doughnut is indicated by the difference between the two. An allowance account measures a hole in an asset when for statistical reasons we desire to show both the original whole and the present hole. Suppose a piece of real estate cost \$40,000 a year ago, and we wish now to show depreciation for the year amounting to \$1,000. We may debit Depreciation \$1,000 and credit Real Estate \$1,000, leaving Real Estate at \$39,000 and carrying \$1,000 from Depreciation to Converted Assets; or we may debit Depreciation \$1,000 as before and credit Allowance for Depreciation of Buildings \$1,000, in which case we shall have not only \$40,000 for Real Estate on the balance sheet, but also an item of Allowance for Depreciation of Buildings \$1,000 on the other side of our balance sheet (as if it were an ownership-claim). The title of the allowance account, however, makes clear that it is neither a liability nor a proprietorship item, but merely a deduction (or negative) for an item on the other side of the sheet. By

this method we avoid all danger of burying beyond resurrection (through various depreciation entries) the actual cost of the property, an important historical fact. The only danger is that some one will observe the \$40,000 for real estate on the balance sheet or on the books and, failing to see the \$1,000 Allowance for Depreciation of Buildings, be deceived. On the balance sheet the danger of this is sometimes avoided by showing the \$1,000 allowance as a subtraction from the real estate item of \$40,000, thus:

Real Estate	\$40,000	
Less Allowance for Depreciation	<u>1,000</u>	\$39,000

This cannot be done on the ledger, for to do so would be to destroy just what we are trying to preserve; but persons unfamiliar with accounts should not try to interpret ledgers. Similar allowance accounts can be provided for depreciation of machinery, of equipment, and of any other kind of property subject to depreciation. The ultimate disposition of the allowance account is discussed in Chapter XVIII.

**Allowance for Bad Debts.** Akin in nature, but somewhat different in detail, is Allowance for Bad Debts (sometimes called Reserve for Bad Debts). Few businesses escape without occasional losses from uncollectible items. These losses, however, belong properly not to the period in which the badness of the debts is discovered, but to the period in which the debts were incurred. This means that at the end of any earning period allowance must be made for the uncollectibility of accounts and notes receivable. So far as the amounts are not yet due, we do not know how many are bad, or which are bad. We know only that in all probability a certain percentage (estimated from general experience) will ultimately prove bad, and one of the costs of making the sales (or, better, of collecting what we do collect on the good sales) is the risk we take and loss we suffer on the bad sales. The risk we take is one of the things that produces sales and profits, and hence the losses, which are the measure of the risk, constitute one of the elements that we have put into sales (like cost of goods, selling wages, etc.) and must be counted as among the converted assets, returned in the price of goods successfully sold. We must,

then, carry the loss ultimately as a debit to Converted Assets (or Sold Goods, or Loss and Gain, as we choose) and show also the shrinkage in assets. Here, however, we cannot, as we could with depreciation of real estate and other tangible property, credit the asset account directly for the shrinkage, for we do not know which individual accounts receivable will prove bad; and we do not wish to write off the account on the ledger until we write off also the individual items of which it is made up, for the two should tally. So here we are forced to credit Allowance for Bad Debts rather than to credit the asset account itself. The complementary debit, which is of course ultimately to be transferred to Converted Assets, or Loss and Gain, or some similar account, will be discussed in connection with nominal accounts later in this chapter. The credit to Allowance for Bad Debts is usually sufficient to put the latter account on the books at a predetermined percentage of the amount of accounts receivable and notes receivable. This is the measure of the overvaluation — or hole in the assets. When accounts receivable of a former period are found to be bad, Accounts Receivable is credited (to show shrinkage of the asset), and Allowance for Bad Debts is debited; now things are as they should be, for the loss was in the year of sale and was charged as a loss in that year through the debit that was made when the allowance was credited, and the debit now made to Allowance for Bad Debts and credit to Accounts Receivable is merely to shift the record of shrinkage from the indefinite allowance account (representing an estimated shrinkage in unknown specific items) to the definite asset account (representing specific sums demandable from specific people). Careful attention to this allowance account must be given, of course, else it will be too small and profits will be overstated, or it will be too large and assets will be hidden; but it contains in itself the information necessary for correction of it when in error. If, for example, all the bills of the preceding period have been either paid or written off and a credit balance remains on this account, it is obvious that the allowance at the end of the first period is excessive, for at the end of the second period no debts of the first period remain to become bad and to absorb it. If, on the other hand, the old bills still unpaid are largely in excess of the balance and are of very doubtful col-



lectibility, the allowance is probably deficient, and better provision should be made in the future.

**Allowance for Discount Offered.** It is common in many lines of business to offer a reduction in the amount of a bill if it is paid early — e.g., 3% if paid within 10 days, 2% if paid within 30 days, and net (regular) terms 60 days. These are called “cash discounts.” Though this is a concession to the customer, it has some advantage to the seller: he gets his pay sooner and can thus turn over his capital more rapidly and save interest, and he gets rid of so much risk of loss by failure to collect (to trust a customer sixty days means just six times the risk, other things being equal, involved in trusting him ten days). The latter is the reason why cash discount rates are so much higher than interest rates. A rate of 3% discount for payment in 10 days, as contrasted with a payment net in 60 days, is 3% for payment 50 days early, or at the rate of approximately 22% a year. So far as payments are early, less than the face of bills will be received on accounts receivable, and hence if they are put on the balance sheet without provision for discounts assets and profits will be overstated. Yet we cannot well reduce the figure on the ledger, for we do not know which customers will take their discounts offered, and we wish our ledger account to tally with the total of the individual items recorded as receivable. We accordingly set up an allowance account to show the overvaluation of accounts receivable, crediting Allowance for Discounts. The complementary debit is ultimately transferred to Converted Assets, or Loss and Gain, or other similar account, and will be discussed later in this chapter in connection with discounts. In the subsequent period Allowance for Discount Offered will be debited for actual discounts given on old bills. The complementary credit will be to Accounts Receivable; thus Accounts Receivable is credited for the discount portion of old bills paid, along with the credit for the cash portion of such bills.

**Allowance for Discount Available.** The converse of Allowance for Discount Offered is Allowance for Discount Available. Our accounts payable are less serious by the amount of discount offered us, and since we cannot well write down the payables now (else they will not tally with the bills), we may set up a contra

account. This is debited for the discount available at the time of adjusting the books. The complementary credit is ultimately transferable to Converted Assets (or other similar account), and is discussed in connection with nominal accounts.

**Provision for Hazard.** Every business house takes certain risks of mischance, and yet the mischance may never in a long career occur. A good illustration of this is fire losses—for modern fire insurance tends to force the insured to bear a part of the risk, and therefore not the whole of the burden can be covered by insurance policies. This means that every year in which no fire loss occurs a business house should accumulate something as this year's share of the burden of loss that in some degree of probability will happen sometime. To leave the loss to be suffered wholly by the year in which the fire chances to fall would be unfair to that year—for the risk of loss belongs to all the years. Hence at the close of every period recognition should be given to the fact that some of the assets, though still intact, are in a sense doomed to disappearance by mischance and that a portion of the loss involved belongs to the past period. The subsequent periods, moreover, though they inherit the assets intact, should inherit a certain margin for shrinkage or loss which will not be held chargeable to them if the loss occurs during their term. Provision for Fire Hazard is an illustration of this sort of thing. The entry would debit Insurance Charges and credit Provision for Fire Hazard. The former, as we have already seen, is transferred to Converted Assets, or Goods-in-Process (or a substitute for one of them); and the latter is a balance-sheet item, which represents neither proprietorship nor liability, but indicates that though the assets are not yet impaired by fire they must not be counted on for the future to realize the book value. A purchaser would give less for a vessel which a submarine torpedo was known to be approaching, even though the excellence of the aim were problematical, than for a vessel outside the danger zone. The vessel is still intact, but the approach of the probable moment of impact affects its value. The Provision for Fire Hazard, though it measures a much less serious probability of loss than the torpedo, represents nevertheless the supposed degree of approach of the final mischance which will be observed only as a single and momentary



event. This provision for fire hazard should be accumulated over a series of years to a sum sufficient to cover the chance of loss on the uninsurable margin of value of all property subject to the risk. Its treatment when the loss precedes the accumulation of the provision is discussed in Chapter XVII.

#### OWNERSHIP-CLAIM ACCOUNTS

**Proprietors' Investment.** Usually the investment of proprietors is kept in a separate account for each proprietor by name, as "John Doe, Investment," or "John Doe, Capital." The partnership agreement will of course show what investment is to be maintained by each partner and how profit and loss is to be shared by each; and this account is to show how closely the partnership agreement is followed in respect to investment, and when the division of profit or loss is to be affected by investment this account will be required for information in that connection also. In case of dissolution, the investment of partners is important for determining the division of net assets or the responsibility for net liabilities. Though the investment accounts are credited for sums intrusted to the business as called for by the agreement, they are not credited for loans made to the business by proprietors. They are debited for reduction of investment by withdrawal. In the case of single proprietorship, profits and withdrawal of profits often are carried to the account with investment. This sacrifices some statistical information, but otherwise does no harm. In partnerships this should not be done unless all partners always at the same time make such withdrawals of profits as may be mutually agreed upon beforehand. Usually withdrawals of profits are fixed by the partnership agreement, and separate accounts should be kept to indicate how closely the agreement is followed.

**Proprietors' Drawings.** In order to distinguish statistically between capital invested, profits earned, capital withdrawn, profits withdrawn, and profits accumulated in the business, an account is usually kept for each proprietor to cover items not invested. This may be called, for example, "John Doe, Drawings," or "John Doe, Personal." To it are credited the following, provided by the partnership agreement: salary, interest on investment, and profits. To it are debited drawings for personal use,



charges for personal service or personal purchases provided or paid for by the business, like goods taken from the store, and losses. This account may have a debit balance during an earning period, for profits may be drawn (if the partnership agreement provides for this) in advance of the adjustment of the books for the balance sheet. If at the end of the period, after the books have been adjusted, it has a credit balance, this balance may be transferred to the investment account if the undrawn profits are meant to be retained as investment, or it may remain temporarily as a liability of the business to the partner for intended later withdrawal.

**Proprietors' Loans.** As already indicated, loans made by a partner are not credited to the investment account, for unless the business is insolvent they are not subject to the hazards of the business except as loans by outsiders are so subject, and a partner is entitled to withdraw his loan in accordance with the terms of the loan exactly as any other creditor is entitled to do. For this reason, an account should be kept for loans by partners. They should not be consolidated with other loans, however, for in case of insolvency they stand in a peculiar relation (suggested by Chapter XX), less with respect to the other partners than with respect to creditors.

**Capital Stock.** In corporations, as already indicated, proprietorship is evidenced by certificates of stock, which are recorded in a special account. Since the peculiarities of this account are numerous and little affect other accounts, discussion is postponed to a chapter devoted to the peculiarities of corporation accounts, Chapter XVI.

**Bonds Issued.** In an incorporated business the account for ownership-claims next in importance to proprietorship is Bonds Issued. This represents the amount which the corporation has pledged itself to pay in a term of years in return for loans made to it in large amount. The account is credited for the face value of the bonds issued, and is debited for payments. The subject of bonds is complicated, and will be discussed in a rather elementary way in Chapter XXI.

**Notes Payable.** Notes payable are virtually the reverse of notes receivable. Notes Payable represents formal negotiable

promises, of the business on whose books the account stands, to pay cash; and this applies to acceptances of drafts as well as to promissory notes;<sup>1</sup> and it does not usually include interest on such notes, even when the notes bear interest, for notes are more easily identified on the books when entered at face value, and the interest is more conveniently handled in a separate account. This account is credited when notes are issued or given and when drafts are accepted, and it is debited when the notes or drafts are paid either in full or in part. It is also called "Bills Payable."

**Mortgage Notes Payable.** Just as one reports mortgage notes held as Mortgage Notes Receivable, one should report such notes issued as Mortgage Notes Payable. Indeed, it is more important on this side of the balance sheet than on the other that these notes be separately reported, for in case of insolvency they would constitute a claim to specific assets and probably be fully paid, thus reducing the share of assets remaining for partial payment of remaining liabilities. Sometimes they are reported on the balance sheet by deduction from the asset side rather than as liabilities, to show the equity in the mortgaged property, rather than its gross value, thus:

Real Estate	\$200,000
Less Mortgage Notes Payable	<u>75,000</u>
	\$125,000

This makes clearer the situation with respect to solvency, or ability to pay debts, but it is not so satisfactory for general purposes; for it detracts from the value of the balance sheet as a clear summary statement of the property controlled and used by the business in earning its income.

**Accounts Payable.** Liability for merchandise, for raw material, and for manufacturing supplies (that is, for principal purchase of tangible things to be quickly converted and disposed of) is commonly credited to Accounts Payable. This account is debited for payments on such accounts and for cash discounts which reduce the amount required to be paid when payment is made early. Its balance usually shows a liability greater than the actual, for discounts offered can commonly reduce the payments. In such cases, a contra account, Allowance for Discount Available,

<sup>1</sup> A discussion of drafts will be found in Appendix A.

can be established, as discussed earlier in this chapter on page 110. Miscellaneous liabilities not for principal purchases of quickly convertible assets are not credited to Accounts Payable but to one of the accounts discussed in the next paragraph.

**Other Payables.** Liability for wages, for commissions, for general expenses and services (like lighting and telephone connections), for supplies, for equipment, and for similar items not entering into sales except remotely, is credited commonly to Vouchers Payable, by a bookkeeping device to be described in Chapter XIII, or to special accounts, like Wages Liability, Rent Liability, etc. The complementary debit is to the appropriate nominal account, like Wages, Commission Charges, Light, Telephone and Telegraph, Rental, Taxes, and General Expenses, or to the appropriate real account, like Supplies, and Equipment. When payment is made, the liability account is debited.

**Accrued Liabilities.** Just as assets may be constantly accruing with mere lapse of time, like claims for interest, for rental, and for royalties, liabilities of the same sort may be accruing against the business. We may well illustrate this with a case involving interest. If we borrow \$1,000 on December 16 on a note, bearing interest at 6%, and payable in 60 days, day by day this interest is accruing against us and on December 31 our balance sheet must show Interest Accrued Liability for \$2.50. The debit which will serve as a complement to this credit is Interest Charges. A corresponding method is used for Rental Accrued Liability, Taxes Accrued Liability, etc.

**Liability on Prepayments.** Just as assets may consist of items prepaid but immediately thereafter subject to exhaustion by mere lapse of time, so liability may consist of liability on account of prepayments to us by others. This liability may be looked at in either of two ways: it is liability to perform service, as to allow the use of money for which interest has been paid in advance or the use of a building for which rental has been paid in advance; or it is financial responsibility for money delivered in advance of the performance of the service. We may again take a case of interest for illustration. If we lend money on a \$1,000 note, not bearing interest and due in two months, we shall lend, if we discount at 6%, \$990. We shall debit Notes Receivable \$1,000, shall credit



Cash \$990, and must credit Interest Unearned \$10.<sup>1</sup> This last item is a liability: we have collected the interest before we have rendered the service. Day by day, however, the service is rendered by allowing the use of the money, and the liability is reduced. The entry for adjusting the books is a debit to Interest Unearned and a credit to Interest Earned. A corresponding method is used for Rentals Unearned, etc. A particularly good illustration of a liability on prepayments is that of long-term subscriptions to magazines.

**Undivided Profits and Surpluses.** In corporations more than in unincorporated businesses it is common to accumulate some of the profits rather than distribute all of them or even allocate them to the accounts of proprietors. In an unincorporated business, a surplus would be simply an undivided credit to partners, left undivided as an indication that a part of the assets arising from profits were not intended to be withdrawn but accumulated for emergencies or for a special purpose. Because Surplus is more common in connection with corporations, it is discussed more fully in Chapter XVI. What is said there applies, *mutatis mutandis*, to partnerships.

**Contingent Liabilities.** It is not uncommon to incur a liability contingent on the failure of ourselves or of others to comply with conditions agreed upon. Most common of such liabilities are endorsements of notes of others, as we saw in connection with Notes Receivable, under Notes Receivable Discounted. Sometimes, however, notes are endorsed for mere accommodation, without immediate financial interest. Such are endorsements or guarantees by controlling railroads of the notes and bonds of controlled roads. Many businesses act as bondsmen for employees who get into the police courts (for the value of a trained workman is great), giving not actual property as a bond, but a promise of

<sup>1</sup> Lest the reader may think we are multiplying interminably the accounts for different aspects of interest, and similar business forces, it may be well to note that (1) all these accounts are in use, (2) the novice is much more likely to grasp the significance of the various aspects of interest if he has an account for each aspect, and (3) when he is sufficiently advanced to keep his head easily through all the aspects in one account, he will be shown a single account for such things in Chapter XIV. Such a single account was common in the old days of bookkeeping, but it is more complicated in theory than the more modern accounting device of separate accounts.

payment if the employee breaks the conditions of his bail. Such a promise is a contingent liability, and should be recorded. It is often customary, too, for contractors to guarantee the completion of work within a certain time limit, and to agree to forfeit a specified sum for each day or week (up to certain limits) in which the work remains uncompleted after the expiration of the time agreed upon for completion. Since the sacrifice which failure of completion will involve may be appreciable and possibly even disastrous, the contingency should be recorded. There is no exact title which should be used for a contingency, but appropriate titles usually suggest themselves. Such awkwardness as the record may make usually lies in the debit complementary to the credit for the liability. That debit is usually a contingent asset, though it may be a contingent loss. In the case of the guarantee of bonds by a railroad, an intelligible entry is a debit to Contingent Lien on Property of Controlled Roads and a credit to Guarantee of Bonds of Controlled Roads. These tell the whole truth on the balance sheet — an asset and a liability. Any one familiar with accounts can see that both are contingent.

#### NOMINAL ACCOUNTS

**Nominal Accounts tied to Real Accounts.** Almost all the common nominal accounts have already been discussed in connection with their related real accounts, for since all nominal accounts are merely real accounts either behind the times or ahead of them, the relation is close. All items of a real account found, at the time of adjustment for the balance sheet, to be converted are transferred from that account and carried to another that by its title suggests to any one familiar with accounts not only that the thing has been converted but also (for statistical purposes) the nature of that conversion. We have already seen in the earlier parts of this chapter the following nominal accounts provided: Supplies, Depreciation, Interest Earned, Interest Charges, Rental Earned, Rental Charges, Insurance Charges, Commission Earned, Commission Charges, Wages, Light, Telephone and Telegraph, Taxes, General Expenses.

**Nominal Accounts with Double Aspect.** Sometimes what is treated above in two accounts, Interest Earned, and Interest



Charges,<sup>1</sup> is treated in one account, Interest. If the business is almost exclusively a borrower, or a lender, the single word in the title is adequate, but if it has activity in both directions the value of statistical figures in each direction is likely to be appreciable and two accounts should be kept. The two sides of the same account, debits for interest charges and credits for interest earnings, would suffice if no correction entries were ever made; but so often are changes and adjustments made, because of errors or misunderstandings, that to assume that all debits are for charges and all credits are for earnings would impair the value of statistics drawn from the ledger. The only sure way is to have an account for each, and carry to the appropriate account all corrections and adjustments, so that the balance and the total of that account can mean only one kind of thing. The same thing is true of rental and of commission discussed above, of discounts to be discussed below, and of any other type of service which we both receive and render. We are about to apply it also to merchandise.

**Sales.** For the same reason that two accounts are desirable for interest in many cases, as given in the preceding paragraph, several accounts are desirable for merchandise. We need to know statistically eight leading facts about merchandise: inventory at the beginning, purchases, returned purchases, discount taken, sales, returned sales, discount given, inventory at the end; the reason for knowing each is noted in connection with each. We also should know discount available and discount offered. One of the most important facts we can know about any business is the percentage of various expenses to the volume of business, so that bad economy, waste, and extravagance, can be stopped. We cannot find percentages unless we know sales. Therefore sales must be segregated in an account, Sales. This must be credited for sales made and debited for overcharges by error. Returns of goods sold but found unsatisfactory must not go to this account and reduce this figure of sales, for expenses of selling are virtually as great for goods that come back as for goods that stay sold. The final credit to Sales should show the total sales made—the gross return from the conversion of other assets into sold goods. We shall bring this gross return into connection with deductions

<sup>1</sup> The term "charges" means "burden," "cost," "expense."



from it and costs of getting it, as shown by the other accounts, in the last part of this chapter, under a clearing account.

**Returned Sales.** Though the expense of selling goods is virtually as great for those that come back as for those that stay sold, the goods themselves have not been converted, and we must recognize the return of the goods in finding profit or loss. We also need statistics of the proportion of returned goods. If this runs unduly or increasingly high, our sales policy may need revision. Returned Sales is debited for returned sales. We shall bring this into conjunction with the other merchandise accounts in the clearing account.

**Purchases.** The reverse of Sales is Purchases. It is used not only for finding the original cost of goods going into sales, but also for finding the percentage of buying expense to purchases. It is of course debited for purchases made, and credited for overcharges, but not for returned purchases. It is finally transferred to the clearing account.

**Returned Purchases.** When goods purchased are returned by the business, Returned Purchases is credited. It is finally transferred to the clearing account.

**Freight and Cartage on Sales.** If the business sells its goods delivered, delivery is one of the costs of converting goods into cash and accounts receivable. An account should be kept for that cost. If delivery equipment is kept, separate accounts should be kept for the equipment itself (a balance-sheet account) and for the various expenses connected with running it. The costs of delivery should be distinguished from other costs. If service of local delivery is extensive, whether engaged from outside or not, it should be debited directly to Delivery. If delivery is only occasional and incidental, it may be combined with freight, in Freight and Cartage on Sales, or Outward Freight and Cartage. This goes ultimately to the clearing account for merchandise.

**Freight and Cartage on Purchases.** This has a purpose for purchases similar to that of the account above for sales, and should be handled in a similar fashion — debited for all costs, and transferred ultimately to the clearing account.

**Discount Given.** We have seen that some account must be

debited for the difference between the face of Accounts Receivable and the cash payment when customers are given a discount on paying promptly. The natural account to debit is Discount Given. If payments on which discounts are allowed were always made in the year when the sales were made, this would be simple; but, as we have seen, the first payments in any period are on account of sales of the previous period, and these should have been taken into account at the time of adjusting the books at the end of that period. The discounts to be actually given, however, could not be known at that time, and therefore the figure used in adjusting the books will hardly ever tally with the actual final figure for the bills concerned. If one is particular about statistics on the operating statement, the debit at the end of a period, for discounts offered and accompanied by a credit for the allowance, may well be carried in an account separate from that for discounts actually given. This may well be Unexpired Discount Offered, so that at the time of adjusting the books for the balance sheet the entry is a debit to Unexpired Discount Offered and a credit to Allowance for Discount Offered. The former is a nominal account, and the latter is real. In the subsequent period, discounts actually given on old sales may be debited to Allowance for Discount Offered (for the discount already taken into consideration in the preceding period, but to be given in this period if at all), and discounts on new business should be debited to Discount Given. Both Discount Given (representing discounts given during the period on business of the period) and Unexpired Discount Offered (representing discounts offered at the end of the period on business of the period) should be debited to the clearing account for merchandise. The treatment of these accounts may be tabulated as follows:

Entering at the end of a period discounts offered on sales made during the period but not yet due:

Unexpired Discount Offered, Dr. Allowance for Discount Offered, Cr.  
(This is a charge against the period of sale.)

Actually giving discounts on sales of the preceding period:

Allowance for Discount Offered, Dr. Accounts Receivable, Cr.  
(This merely cancels the Allowance already made and is not now a charge against any period.)

Actually giving discounts on sales of the current period:

Discount Given, Dr.

Accounts Receivable, Cr.

(This is a charge against the period when given, which is also the period of sale.)

As we shall see in Chapter XIV, these entries may be short-cut somewhat. If one does not care to distinguish between discounts actually given in a period and those figured in advance as belonging to the sales of that period even though actually taken in a later period, the single account, Discount Given, will serve for both. In that case, it will be debited when either Allowance for Discount Offered is credited for adjustment at the end of a period, or Accounts Receivable is credited for discounts given in a period on sales of that period; but of course the title of the account is somewhat misleading for the former purpose.

**Discount Taken.** For discount taken on purchases we need an account the converse of Discount Given, i.e., Discount Taken. This may be credited when either Accounts Payable is debited for discounts taken in the period on purchases of the period, or Allowance for Discount Available is debited for the adjustment at the end of the period. If, however, we are to distinguish on our operating statement between discounts actually taken in any period and those available at the end of a period but not taken until the subsequent period, we must have another account to credit when we debit Allowance for Discount Available at the end of a period. This may well be called Unexpired Discount Available. It, like Discount Taken, will be transferred ultimately to the clearing account for merchandise. In any period, discounts taken on purchases of a preceding period would be credited not to Discount Taken, but to Allowance for Discount Available; for the discount has already been taken into the accounts through the closing entry of the previous period.

**Disposition of Balance of Allowance for Discounts.** If the allowance for discounts set up at the end of a period proves to be excessive, i.e., if it is in excess of the discounts actually taken or given on old business in the subsequent period, the excess is a loss or gain of the new period. If we are allowed to take a discount in any period on the purchases of an earlier period and fail to do so, the forfeited discount is a loss of the period in which we fail to



take that advantage, and hence any debit balance on Allowance for Discount Available after all discount dates have gone by should be carried to Loss and Gain as an expired (wasted) asset. The account cannot have a credit balance. Any credit balance on Allowance for Discount Offered, on the other hand, should be carried to Loss and Gain as a gain arising from the fact that customers have paid more on their bills than the minimum required. This is further discussed in the next paragraph.

**Cash Discounts Forfeited.** Curiously many business men have entirely misunderstood the statistical value of figures for cash discounts. We need to observe not only how much less valuable are our accounts receivable and how much less serious are our accounts payable because of these discounts, but also what guidance the figures can give us for the conduct of our business. If we have the right to take \$5,000 in discounts by paying our bills promptly, it is the height of foolishness not to pay promptly — provided we can raise the money, and we have already seen that the rate of cash discount is usually much higher than the interest rate for borrowed money, and so it pays to borrow. What, then, does a man need really to know about his discounts? Two things — the discounts that he might take, and those that he does take. He cannot afford to set off discounts given against discounts taken and say that he is losing nothing if only he takes as many discounts as he gives; for the discounts taken by his customers have nothing to do with the discounts which he takes. If customers pay slowly, they may force him to borrow in order to take his discounts, to be sure, but such customers pay him an extra price for delay (i.e., the full billed price for goods when they might pay a smaller price), and this extra price is much more than the interest which he will have to pay if he borrows as a means of meeting his own bills and taking the discounts offered him. So he should take all discounts offered him, and he needs to be warned at once when any discount is forfeited. Indeed, he stands more in need of information about discounts not taken by himself than about those actually taken by either himself or his customers. Discounts not taken by him are a loss of all that they amount to above the interest on the money, and they constitute a loss without any return — provided he has or can borrow the means of

payment. Discounts given to his customers, on the other hand, are not losses — they are mere corrections in the price of goods; for prices are quoted on the assumption that customers will pay late, that they must pay more for delayed payment and risk, and hence when they pay early they are entitled to an allowance for the privilege (charged in the bill) which they did not use. What accounts should show for purchases, therefore, is a net debit to Merchandise of the lowest cash price offered, whether discounts are actually taken or not. The difference between the discounts actually taken on the purchases of the current period and those available on the purchases of that period should be charged to Discount Lost, which is not a cost of merchandise but of poor management or bad credit. Similarly sales should have a net credit of the lowest cash price only, whether discounts are taken or not. The difference between the offered and the given should be credited to Discount Collected—an earning from capital risked in slow accounts receivable. Forfeited discounts on old business are automatically cared for by the allowance account already described. The ideal handling of payment by the firm of a bill for purchases of the current year follows:

Dr. Accounts Payable for the face of the bill  
Cr. Cash for the net amount  
Cr. Discount Taken for the discount taken  
Cr. Merchandise for the discount lost  
Dr. Discount Lost for the discount lost

The discount taken is in any case closed to the summary account for merchandise at the end of the period, and thus, along with Discount Lost, makes the correction in the billed cost of the goods; but whereas discount taken reduces the cost of the goods in reality and costs nothing except a loss of interest, discount lost costs cash and brings no return. It is feasible to provide special columns in a cash book (one extra column will serve if the totals are properly handled) to give this important information. In the illustrations following it is not done, however, for a well conducted business will not lose discounts and hence needs no such provision. It is not so important to distinguish Discount Collected; for the item is not controllable, and the profit is in Merchandise.

**Rental Charges and Rental Earned.** If a building occupied



is not owned, and a building owned is let, the distinction between the two aspects of rent should be maintained throughout; for the rental of the building occupied is an expense of doing business and therefore a desired statistical figure, and the building owned is independent of the business conducted in the hired building and hence figures for it should not be consolidated with figures of the other business — to the confusion of both sets. When the tenant pays water charges, insurance, taxes, etc., he should charge such items to Rental Charges; for he is concerned with the total cost to him of the premises hired and has no need of statistical information that might be of help to the owner. The owner, on the other hand, if he has many properties, will need information for guidance, and should not directly cancel expenses of property against income, but should enter to Rental Earned only income (and correction entries) and carry expenses to separate accounts for them; but the owner of a single property, like the tenant, could carry both income and expenses to Rental Earned, crediting it for the former and debiting it for the latter, for with few entries the desired items of information can be more easily picked out of a single account than handled in various accounts.

**Loss from Bad Debts.** The nature of losses from bad debts and the method of indicating probable uncollectibility have already been discussed in this chapter in connection with Allowance for Bad Debts. The common account to represent the operating debit for the period because of bad debts is Loss from Bad Debts. All debts written off as bad during the period in which they were incurred are debited to Loss from Bad Debts and credited to Accounts Receivable. Then Loss from Bad Debts is an offset to Sales, showing the reduction in actual as compared with supposed receipts from sales, but kept in a special account for statistical purposes. These are not all the losses, however, for sales made late in a period cannot be due until the next period and hence the uncollectible items cannot be known to be bad until later; so in order to find our profit for the period we estimate the uncollectible accounts receivable at the end of the period and add the figure to the losses already written off. A simple entry is to debit Loss from Bad Debts and credit Allowance for Bad Debts. This is satisfactory except to those who say that an estimated loss



is not necessarily an actual loss, and hence Loss from Bad Debts should not be debited, but some other account suggesting that this is only an estimate of future happenings that are retroactive on the business of this period. This distinguishes between two ways of judging the amount of loss. As a matter of fact, an account is virtually never actually known to be bad: even a discharge in bankruptcy is sometimes followed by a paying of old debts out of earnings subsequent to bankruptcy, and death in insolvency is sometimes followed by an honorable paying of debts by heirs who inherit nothing else. So virtually all losses from bad debts are estimated: but so far as judgment based upon knowledge of the particular circumstances of a specific account is different from judgment based upon generalized knowledge of the collectibility of accounts as a whole, two accounts for such judgment of losses may be worth while. If the second account is adopted, it may well be called Debt Loss Estimated. This will be debited instead of Loss from Bad Debts when the allowance is credited. Then at the end of the period both Loss from Bad Debts and Debt Loss Estimated will be transferred to Converted Assets or whatever summary account is used to bring together the nominal accounts and find profit or loss. The result in the end will be the same as if only one such account had been kept, but the statistics will have been a bit more accurate. This method is illustrated in the following paragraph.

**Allowance for Bad Debts Illustrated.** Suppose at the end of the first year of business the accounts receivable were \$75,000 and no notes receivable were held. Suppose 2% was estimated as the proper allowance for bad debts. The entry for adjustment is a debit to Debt Loss Estimated and a credit to Allowance for Bad Debts of \$1,500. Suppose during the following year \$1,300 of old debts and \$3,700 of new are written off as bad, and at the end of the year the accounts receivable amount to \$125,000 and 2% is still deemed adequate allowance. During the year Loss from Bad Debts will be debited \$3,700 and Allowance for Bad Debts will be debited \$1,300, and Accounts Receivable will be credited \$5,000. At the end of the year, before the new allowance is made, the allowance account has a credit balance of \$200 and it now needs \$2,500 credit balance for the new year. So it must have a new

credit of \$2,300 to set it right; an entry debiting Debt Loss Estimated and crediting Allowance for Bad Debts will accomplish this result. Both Loss from Bad Debts and Debt Loss Estimated are carried to the proper summary account (perhaps Loss and Gain): for the first year (supposing no accounts were written off during the year) the amount transferred to that account was \$1,500 (Debt Loss Estimated only); but for the second year it is \$6,000 (\$3,700 of Loss from Bad Debts written off during the year, and \$2,300 of Debt Loss Estimated on unpaid bills at the end of the year). This is on the assumption that a part of the debts incurred the first year are still outstanding and not written off at the end of the second, and that \$200 is still deemed necessary for them: if all the old debts are cleaned up, or cleaned off, however, the balance of \$200 on the old allowance is unnecessary, the charge the first year was excessive, and the \$200 may be transferred, from the Allowance for Bad Debts, to Proprietorship (to correct an original excessive charge for estimated shrinkage of assets); and in that case the new Debt Loss Estimated must be debited the whole \$2,500 now necessary to cover estimated bad debts of the business of the second year, and the Allowance for Bad Debts will be credited the same amount. The reverse would be the case if the allowance had been deficient.

**Depreciation and Maintenance.** The general subject of depreciation is so important and so many kinds of treatment are possible for it that it requires discussion in a chapter by itself. For our immediate purpose in this chapter we need to note only a few facts. The first is that so closely allied to depreciation is maintenance that the two subjects can hardly be separately discussed. Depreciation in the accounting point of view is shrinkage in the value of property with respect to the purpose to which it is applied. If the property is applied to manufacturing purposes, a loss in its value for that purpose, due to shrinkage in productivity, to deterioration so that the cost of running is increased, or to gradual approach of the end of its usefulness, is depreciation; allied to this, and usually included in the same account, is obsolescence, the shrinkage in value of property not because of any changes in it but because of changes outside of it which render it less valuable for its own purposes—like changes in fashion or



custom which destroy demand for its product, and new inventions and new demands which relegate the property to a discarded or semi-discarded class. Loss of value in other respects than that to which the property is applied does not constitute depreciation: a fall of market price for a machine that is to be used and not sold, when that fall in price is due not to changes in the intrinsic desirability of the machine itself (like obsolescence of it) but applies to similar new machines, has nothing to do with its value in use for the owner who bought under the old price, and hence does not constitute depreciation. Property held for sale, however, is properly said to be depreciated when the market value falls, for the usefulness of such property is market usefulness only. Maintenance, on the other hand, is the cost of overcoming or forestalling depreciation, through repairs and replacements. In the cases in which maintenance during a period wholly offsets depreciation during that period, for the period as a whole there has been no depreciation, but only maintenance; in the cases in which no repairs or replacements have been made, there has been no maintenance, but only depreciation. Commonly repairs and replacements cannot altogether offset depreciation, and hence both are suffered as costs. They should be distinguished for statistical purposes, though as costs there is no difference between them: for depreciation consists in a shrinkage of property, and maintenance consists in a reduction of cash to avoid shrinkage of other property; but both are costs of product. They are discussed more fully in Chapter XVIII.

**Other Nominal Accounts.** Of the other nominal accounts the titles are usually sufficiently suggestive. A few comments only are necessary here. The classification of expense items into groups should always consider the statistical information desired, for the sole purpose of maintaining separate accounts for different sorts of expenses is to get statistical information. A business advertising widely, for example, may need to know the comparative value of advertising by newspapers, by magazines, by circulars; and hence it may need three accounts for advertising, one for each sort, in order that for each it may compare the return with the cost. Most business houses, on the other hand, need only one advertising account. This matter of classification of expenses is



discussed more fully in Chapter XXII. The only cautions particularly necessary here are the following: "cash discount" for early payment of bills must not be confused with discount which is prepayment of interest, for the former should go to one of the accounts discussed on pages 119-122, and the latter to Interest Charges or to Interest Earned; supplies should be usually subdivided not only as indicated above, but office supplies should be further subdivided as Stationery and Printing, Postage, etc.; General Expenses must not be a cover for all sorts of expenses that ought to be watched individually, like traveling expense, heat, light, and insurance, but should take items of infrequent occurrence not a part of routine operation, like auditor's fees and occasional legal fees not connected directly with any particular department activity; when departments are maintained, most expenses either should be kept separate from the start, like wages, light, heat, stationery, etc., for each department, or should be distributed among departments on an equitable basis when the books are adjusted; all shrinkage in assets and increase in ownership-claims when not the result of a direct exchange (of an item recognizable on the books under its own name for another so recognizable) involves a conversion or indirect exchange, and some nominal account is intended to report just that sort of conversion, and hence some nominal account must be debited, as Insurance Charges for expirations of Insurance Prepaid, and Rent for Rent Liability; and all increase in assets and decrease in ownership-claims when not the result of a direct exchange involves a conversion, and some nominal account, intended to report just that sort of conversion, must be credited, as Commission Earned for an increase in Commission Accrued, and Interest Earned for a decrease in Interest Unearned. These last two points are so important that they may well be illustrated anew in summary form, as in the following paragraph.

| **Interest Accounts as Typical.** The best way to summarize the relation between real and nominal accounts is to take a series of transactions related to a single business force and see the record of the various aspects of that force. For this, interest is the most serviceable, and as we have nowhere had the interest accounts treated comprehensively in their relation to one another, it is

well to examine them now in summary. What is said of the accounts for interest, moreover, applies to those for any other force with similar aspects, like rent, commission, wages. We have had six interest accounts discussed — Interest Accrued, Interest Prepaid, Interest Earned, Interest Accrued Liability, Interest Unearned, and Interest Charges. We will suppose four transactions to occur in the last month of the year, each incomplete in its effect until the next year, each typical of a kind of interest transaction, and the four together covering all types of interest transactions. The four are as follows, arranged in tabular form:

<i>Date of transaction</i>	<i>Kind of transaction</i>	<i>What given</i>	<i>Amount given</i>		<i>What got</i>	<i>Amount got</i>		<i>Note bearing interest</i>
Dec. 1	borrowing	Note Payable	\$1000	00	Cash	\$ 975	00	No
11	lending	Cash	597	50	Note Rec.	600	00	No
16	lending	Cash	1200	00	Note Rec.	1200	00	Yes
19	borrowing	Note Payable	2000	00	Cash	2000	00	Yes

The debits and credits in order, in accordance with the content of accounts discussed in this chapter, are as follows:

<i>Debits</i>			<i>Credits</i>	
Dec. 1	Cash	975.00	Notes Payable	1000.00
	Interest Prepaid	25.00		
Dec. 11	Notes Receivable	600.00	Cash	597.50
			Interest Unearned	2.50
Dec. 16	Notes Receivable	1200.00	Cash	1200.00
Dec. 19	Cash	2000.00	Notes Payable	2000.00

On Dec. 31, at adjusting the books, we should have to note all decreases in prepayments and increases in accrued items as follows (following the same order of notes as before, and indicating the number of days used for each entry):

<i>Debits</i>		<i>Credits</i>	
Interest Charges	5.00	Interest Prepaid	5.00
(30 ds. expiration of prepayment on note of Dec. 1)			
Interest Unearned	2.00	Interest Earned	2.00
(20 ds. earned on prepayment on note of Dec. 11)			
Interest Accrued	3.00	Interest Earned	3.00
(15 ds. earned on accrual on note of Dec. 16)			
Interest Charges	4.00	Interest Accrued Liability	4.00
(12 ds. accrual of liability on note of Dec. 19)			

When these items are posted our six interest accounts will give us the following balances:

	Dr.	Cr.
Interest Accrued	3 00	
Interest Prepaid	20 00	
Interest Charges	9 00	
Interest Accrued Liability		4 00
Interest Unearned		50
Interest Earned		5 00

Our assets of interest are \$23.00 (accrued, and prepaid), our charges are \$9.00, our liabilities (accrued against us, and prepaid to us) are \$4.50, and our earnings are \$5.00. This means net assets (assets less liabilities) of \$18.50, and net charges (charges less earnings) of \$4.00. Observation of the note accounts and Cash will prove the correctness of these figures: we have received \$1,177.50 more cash than we have given up, and we have given up \$1,200 more notes than we have received, or a shrinkage of assets in these respects of \$22.50; but our net assets of interest are \$18.50, so that our final shrinkage of assets is only \$4.00. Why have we lost \$4.00 of assets in real accounts? Because our net interest charges, as we have just seen, are \$4.00, and these have gone into conversions: Interest Charges and Interest Earned are the nominal accounts, and the other interest accounts are real. Interest Charges and Interest Earned go upon the operating statement as conversions and yield from conversions respectively, the final result of all conversions showing as profit or loss; and the other, or real, interest accounts go on the balance sheet to represent the assets or liabilities which have resulted from the operations.

### CLEARING ACCOUNTS

**The Nature of Clearing Accounts.** Often we desire information not only regarding the details of operation and the final net result of all operations as a single group, but regarding certain subdivisional groups of detail — that is, we wish to see not only individual trees and the forest as a whole, but certain sections of the forest as entities. Clearing accounts perform this function, bringing together individual accounts to form a group, and carrying on the net figure of the group to a still larger group or to the final ac-



count for Converted Assets, or Loss and Gain, or what not. When they do this they may be called "summary clearing accounts." Often, too, in order to make administrative decisions, we must gather certain group information for inspection in one aspect, as total cost of power, and then observe it from a new angle in its effect on department costs, as distributed to departments on an equitable basis. Clearing accounts perform this function, and when they do this may be called "distributive clearing accounts." One account, for example, Power, gathers all the elements of power cost, like fuel, oil, water, depreciation, and power wages, and distributes the total to department accounts, so that we may form conclusions regarding not only fuel, etc., individually, and power as a whole, but also operations of individual departments.

**Clearing Account for Merchandise.** It is common to bring together all items connected with direct sales and direct cost of sales, so as to show the gross profit on merchandise, in Trading, or Merchandise. This is done by transferring to this account the balances of the accounts concerned. This clearing account will be debited for the opening inventory, for purchases, for freight and cartage inward, for freight and cartage outward, for returned sales, for discount given on sales, and for unexpired discount offered. It will be credited for sales, for returned purchases, for discount taken on purchases, for available discount, and for the closing inventory. Loss from bad debts is not usually carried to this account, for such loss is a matter not so much of sales as of collections (though of course the two things are closely connected, for any one can sell goods to people who won't pay), and we wish to compare gross profits with selling costs. The final balance of the clearing account is carried to the account which takes the expenses of trading. This may be Loss and Gain, if there are no other sources of income, where it is compared with the expenses of selling goods: or it may be a special or new clearing account for gathering all expenses for selling into one place with gross profit but apart from profits from other sources. In the illustration following it is assumed that the gross profit is carried to a second clearing account, Trading.

MERCHANDISE			
Inventory, 1/1/21	128,000	Sales	486,000
Purchases	336,000	Returned Purchases	3,000
Frt. and Cart. Inward	4,000	Discount Taken	6,000
Returned Sales	18,000	Unexpired Discount Available	1,000
Frt. and Cart. Outward	1,000	Inventory, 1/1/22	131,000
Discount Given	6,500		
Unexpired Discount Offered	3,000		
Trading [balance]	130,500		
	<u>627,000</u>		<u>627,000</u>

The opening inventory is brought from the account which was used for the balance sheet at the beginning of the period, by whatever name called. The closing inventory will not have been previously on the books, but will be put on the books by the process of setting up this clearing account. The clearing account will be credited as shown, and the new account for the balance sheet (which may be used directly as the opening item for next year's clearing account) will be debited.

**Cash Discounts as Profit or Loss.** Difference of practice is found in the treatment of cash discounts. Before people began to analyze business transactions, when they were satisfied with mere bookkeeping records of obvious fact, the common practice was to treat discounts given to customers as costs of business, just like wages, and to treat discounts taken on purchases as earnings. This practice has continued in many businesses, and even is recognized as satisfactory by some government bureaus on reports made to them. It neglects the fact that though it is customary to allow a liberal margin of time for the payment of bills, the price fixed on goods always takes this into account: the quoted price always includes (usually consciously on the part of the seller) two elements — the natural (cash) price of the goods, and an additional sum as compensation for waiting for payment (involving interest and risk). When, then, payment is made early, so that interest and risk are saved, the discount given the customer is not a cost: it is merely the reduction in charge to him for a service which he did not get. He was originally charged for delay in payment: he is now credited to cancel the charge for what he did not use. The debit for discounts given is then really a correction of the excessive price at which the goods were billed, and is therefore

absolutely nothing but a deduction from sales, kept in a separate account for statistical purposes; and a credit for discounts taken is similarly not a gain, but a correction of the excessive charge to purchases, kept separately for statistical use. They are therefore carried to the clearing account above, and are treated accordingly on an operating statement, as shown on page 351. It is also true, as pointed out on page 122, that discounts offered by us and to us are reductions in the price of the merchandise as such, whether they are utilized or not, and hence should be carried to the clearing account. If any discounts are recorded as forfeited on sales or on purchases of the period, they will already have been brought here, to correct the overcharges or the overcredits, as we have seen.

**Clearing Account for Trading.** If a business has other sources of income, as interest on loans, commissions earned, rentals earned, it should not combine sources of income in such fashion as to destroy the significant facts about any source. The expenses of the trading end of the business should be compared with the gross profits and with those alone, and hence gross profits should not be consolidated with profits from other sources until after the expenses have been shown with the gross profits in the same account to give a final trading profit or loss. This purpose is served by Trading, a clearing account, as illustrated below. It will be observed that the balance of Trading is carried to Income, which we are here assuming to be the final loss and gain account.

TRADING			
Wages	68,000	Merchandise	130,500
Rent	5,000		
Light	400		
Heat	800		
Loss from Bad Debts	3,000		
[Etc.]	5,300		
Income [balance]	48,000		
	<u>130,500</u>		<u>130,500</u>

Often the title "Trading" is used for the account shown above under the title of "Merchandise," and what we have here carried to Trading may then be carried to Loss and Gain; but as some account should show the net effect of all mercantile business, as in



Trading above, and as no other title is so expressive of this, that fact is sufficient reason for this use of it. This illustrates the flexibility of terms; but in interpreting the accounts of others we should not assume without further information that Trading has one or the other content.

**Goods-in-Process, Converted Assets, Manufacturing.** We have already seen in Chapter VI that we can carry our various expenses of manufacturing to Goods-in-Process, and then carry them out to Finished Goods as the manufacture is completed. This makes Goods-in-Process a clearing account. We saw in Chapter VII that to Converted Assets were carried all costs of conversion at the end of the period, and that these costs were then transferred to the appropriate accounts to show their yield. This makes Converted Assets (though the title used here was designed for the purpose of illustration and is not often found in business) a clearing account. Sometimes instead of Goods-in-Process and Converted Assets we find Manufacturing, but serving the same purpose and handled in the same way as one or the other of them.

**Income, Loss and Gain, Undivided Profits.** The final figure of profit for any period is usually found in a clearing account that groups the various kinds of profit and kinds of loss belonging to the period in question, such as profit from trading, earnings from commission, loss on real estate operations, etc. Income, or Loss and Gain, or Undivided Profits (in the case of corporations), serves this purpose. One may even desire to accomplish this end by installments, and have several such clearing accounts. Sometimes we have Operating Expenses, to gather all expenses of principal business into one account, and Operating Earnings to gather all kinds of principal income, and Net Earnings to combine these as a final figure for principal business, and finally Net Income as a final figure for all kinds of income ready for disposition. Whether one shall maintain all these accounts or not is determined by one's interest in showing on the ledger in permanent form various business relations that should be shown on statements in any case.

**Distributive Clearing Accounts.** In factories and in department stores a matter of much importance is the distribution of

space costs among departments, so that each shall bear its fair share. The bookkeeping record of distribution is made preferably through a distributive clearing account. Often distribution of all such costs is made on a straight percentage basis, and often on bases which apply different percentages to different kinds of cost. The methods of finding a fair share will be briefly discussed in Chapter XXII. Whatever the method, however, the task of transferring many separate expense accounts to many separate department accounts is much simplified by transferring net expenses to one account and then the total piecemeal to the several departments, rather than transferring the total of each of many expense accounts piecemeal to many department accounts. An illustration of such a clearing account is given below.

SPACE COST				
Rent	15,000	Department A		7,500
Fuel	2,000	" B		3,750
Light	1,200	" C		1,875
Janitor Wages	2,500	" D		1,875
Janitor Supplies	500	" E		7,500
Elevator Power	300			
Elevator Wages	1,000			
	<u>22,500</u>			<u>22,500</u>

This principle may be applied to many accounts, recording a vast deal of statistical information without destroying or confusing information needed for the balance sheet.

**Clearing Accounts Real or Nominal.** It will have been noted that clearing accounts gather information both for the balance sheet and for the operating statement. Goods-in-Process was debited for all the costs involved in manufacturing, was credited for those that needed record in another account, Finished Goods, and had as a balance the value of goods still in process; so it is a real account. Space Cost, on the other hand, is used only at time of adjustment of the books, is then debited only for things that have already lost their identity as assets under the names used for the accounts, and is credited only for transfers of those unreal (because already converted) things to other accounts; so it is purely nominal; it can have no balance, for it is merely a transfer agent.

## QUESTIONS AND PROBLEMS

## ASSET ACCOUNTS

1. In what account or accounts should you carry each of the following assets acquired by a manufacturing concern?
  - (a) Office desks and chairs
  - (b) A five-dollar bill found in a cash drawer
  - (c) A note of John Jones bearing interest at 6% dated two months ago
  - (d) A mortgage note received
  - (e) New adding machines
  - (f) Milling machines
  - (g) Five hundred tons of coal
  - (h) Rent paid for two months in advance
  - (i) A note endorsed by you, not paid at maturity (a week ago), on which you have received no notice of protest
  - (j) Bonds set aside now to be available for sale when we wish cash for the extension of activities of the factory
  - (k) Finished goods claimed by a customer who is suing you for their possession
  - (l) Real estate worth \$10,000 pledged to the Employees' Association on condition that the employees subscribe \$10,000
  - (m) Accounts receivable three years old, if your terms are 60 days
2. Show the debits and the credits for the transactions following. (Assume interest, if not otherwise specified, to be at 6%.)
  - (a) A business draws a sight draft for \$2,000 on Dun & Angus who owe it on accounts receivable \$2,000, in favor of Brown's Sons Co. from whom it has purchased goods. The draft is paid.
  - (b) We present for payment a note for \$3,000 of J. Stone, dated nine months ago, bearing interest at 5%. Stone gives us in exchange a note of R. Wood due to-day, and cash for the interest accrued on his own note.
  - (c) We pay interest \$50 in advance to S. Marble who lends us for two months \$5,000 at 6%.
  - (d) At the end of two months we repay S. Marble's loan.
3. Show the debits and the credits to the appropriate accounts for the transactions following.

Jan. 1. A business receives in payment of accounts receivable notes as follows: from R. Simpson in payment of his bill due to-day a note for \$2,000, payable one month from to-day with interest @ 6%; from H. Foote for his bill due February 1 a note for \$1,000 payable without interest in one month; from R. Gould in payment of his bill due to-day a note for \$500, payable in six days with interest @ 6%.

Jan. 7. The note of R. Gould is presented for payment but is not paid. Simpson's note is discounted at the bank.

Feb. 1. Foote pays his note. Gould, who has been forced into bankruptcy, pays fifty cents on the dollar on his note and on the interest to date. Simpson's note is paid.



4. (a) The Windham Co. discounts at its bank to-day three notes dated to-day. The first note is for \$1,000 due in one month, and is signed by E. C. Seaman. The second note, signed by C. E. Waterman, is for \$500 and is due two months from to-day. The third is a note of H. Wilson for \$2,000 due one month from to-day. None of the notes bears interest.
- (b) At maturity Wilson's note is paid. (c) Seaman's note is not paid at maturity and we take it up. We have hope of later collecting the amount. (d) Fifteen days later the principal of Seaman's note is paid, but no interest for the extended loan is collected. (e) At maturity Waterman's note is presented for payment but is not paid. We take it up. (f) After waiting a month longer we give up all hope of collecting on Waterman's note.

Assuming interest to be 6% show the entries on the Windham Co.'s books for all the transactions in which the notes were involved.

#### CONTRA ACCOUNTS

5. On Jan. 1, Real Estate has a balance of \$20,000, Machinery of \$40,000, and Equipment of \$9,000. On June 30 the books are brought to the time and depreciation is recorded. The real estate is estimated to have depreciated 1%, the machinery 2%, and the equipment 3%. It is desired to keep the real estate on the books as it now is, in order to preserve statistically the cost of the property, but the machinery and equipment accounts are desired to show present values.
- (a) What debits and credits should be made to accomplish this?
- (b) If on July 1 the depreciation is overcome by repairs so that the property is in the same condition as on Jan. 1, how shall you record that fact?
6. A business which manufactures high explosives sustains on the average of once in two years an explosion of a varying degree of severity. Because of the high risk, insurance rates are prohibitive, and the company insures itself. How should you expect it to do this, and what accounts should you debit and credit for the provision? What should you debit and credit at the time of an explosion?
7. A mercantile house makes a monthly provision for allowance for bad debts which it figures at 2% of its Accounts Receivable balance on the last day of each month. How much does the business credit to Allowance for Bad Debts in each of the months involved in the transactions given below?

On January 1 the books show a balance of Accounts Receivable of \$200,000 and an allowance of \$4,000. During the month \$1,000 of the accounts receivable prove bad and are debited to the allowance. The balance of Accounts Receivable Jan. 31 is \$225,000. During February \$2,000 of Accounts Receivable prove bad, and the balance of Accounts Receivable on the 31st is \$198,000. During March no debts prove bad — the balance of Accounts Receivable at the end of the month is \$200,000. In April \$2,000 is debited to the allowance, and

the balance of Accounts Receivable on the 30th is \$230,000. In May \$400 of Accounts Receivable prove bad, and the balance at the end of May is \$210,000. In June \$200 of Accounts Receivable is found bad, and at the end of the month the balance is \$190,000.

#### OWNERSHIP-CLAIM ACCOUNTS

8. (a) A business discounts for an employee a non-interest bearing note of Smith & Smith, face \$1,000, dated one month ago and due 15 days hence. What should be debited and what credited?
- (b) On adjusting its books, Dec. 31, 1921, it finds that it has outstanding the following notes payable: #648, bearing interest at 6% dated Dec. 1, 1921, due Feb. 1, 1922, for \$500; #649, without interest, dated Nov. 30, 1921, due Jan. 30, 1922, for \$1,000; and #652, bearing interest at 6%, dated Dec. 17, 1921, and due in 15 days, for \$2,500. What debits and credits shall it make to bring the books up to the time with respect to these notes (not with respect to the proprietors' gain or loss accounts)?
- (c) The note of Smith & Smith mentioned in (a) above is paid. What is debited and what credited?
- (d) You lend money to Arthur Brown on his note for \$200 payable in one month. He pays you the interest in cash in advance, and you give him a check for \$200. What debits and credits should be made?
9. Interpret as far as you can, either separately or in conjunction, the starred items on the following balance sheet certified as in accordance with books of account which have been adjusted to date:

Real Estate*	\$18,000	Partner A Capital	\$40,000
Fixtures	5,000	Partner B Capital	30,000
Merchandise	53,000	Mortgage Notes Payable*	12,000
Notes Receivable*	8,000	Notes Payable	19,000
Accounts Receivable*	87,000	Notes Discounted*	4,000
Bonds*	10,500	Accounts Payable	56,000
Cash	4,500	Allowance for Depreciation of Real Estate*	3,000
		Allowance for Bad Debts*	5,000
		Surplus Reserved for Mortgage Payment*	11,000
		Undivided Profits*	6,000
	<u>\$186,000</u>		<u>\$186,000</u>

10. A magazine which receives one-, two-, and three-year subscriptions wishes to know monthly (a) new subscriptions, (b) current expiration of subscriptions, (c) liability on subscriptions unexpired for this and for each of the years for which subscriptions have been received. What accounts should the magazine keep for this purpose?
11. The following three provisions are made in the agreement of a partnership whose fiscal year is the calendar year.
  - (1) Partner B is to have at all times an investment equal to two-thirds of A's investment; in case of default B shall be charged interest @ 6% on the deficiency.
  - (2) Profits are to be shared equally and credited to partners annually. Monthly drawings by partners may be made, by A \$700,

by B \$500, but these shall be deemed to be anticipation of profits, and shall not be credited to partners as salaries.

- (3) If a partner's share of the profits for the year is insufficient to cover his drawings, the insufficiency is to be charged to his capital account unless profits of the previous year have not been withdrawn.

On Dec. 1 A's capital account has a balance of \$30,000, B's capital account of \$20,000. A's drawing account has debits of \$7,700, B's drawing account has debits of \$5,500 and credits of \$2,000.

What accounts should you debit and what credit to record the following:

- (1) On Dec. 10 A withdraws \$6,000, and B also withdraws \$6,000. (Is this in accordance with the partnership agreement?)
- (2) On Dec. 31 A and B withdraw their monthly allowances.
- (3) The profits of the year are found to be \$13,000.
- (4) B withdraws his profits.

### NOMINAL ACCOUNTS

12. Balances are found on a ledger as follows. List separately those which are debit and those which are credit balances. (The total of each set of balances is \$141,550.)

Notes Receivable Doubtful, \$1,000; Provision for Fire Hazard, \$3,000; Goods-in-Process, \$12,000; Sales, \$51,500; Cash, \$20,000; Depreciation, \$2,000; Supplies, \$250; Insurance Prepaid, \$500; Leaseholds, \$1,200; Wages Liability, \$500; Power Plant, \$2,000; J. Brown, Investment, \$47,000; Petty Cash, \$50; Repairs Suspense, \$750; Allowance for Depreciation, \$2,000; Mortgage Notes Payable, \$3,000; Debt Loss Estimated, \$1,000; Mortgage Notes Receivable, \$3,000; Purchases, \$35,000; Stocks, \$8,000; Accounts Payable, \$20,000; Machinery, \$10,000; Interest Earned, \$3,050; Discount Given, \$750; Rental Earned, \$1,000; Wages, \$10,000; Allowance for Bad Debts, \$1,000; General Expenses, \$5,000; Notes Payable, \$9,500; Merchandise Inventory, \$9,500; Real Estate, \$12,000; Raw Material, \$3,550; Bonds, \$4,000.

13. Show the debits and credits under each of the two assumptions made for the transactions discussed in the paragraph entitled "Allowance for Bad Debts Illustrated" (p. 125), and show a rough ledger for all the accounts concerned.
14. Show debits and credits for the following:
  - (a) An allowance is made at the close of the year for estimated bad debts outstanding in Accounts Receivable on sales of the year, \$9,000.
  - (b) John Doe, a customer whose account for \$900 was included in Accounts Receivable at the close of the year, gives us a note for his balance with interest, \$915.
  - (c) We discount Doe's note for \$900.
  - (d) Doe fails to pay his note, and we take it up for \$915.
  - (e) We write off this indebtedness to us against the allowance for bad debts made previously.
  - (f) Two years later, John Doe pays his debt, with interest, \$1,025.



(g) This \$1,025 gives us an unexpected margin for an experiment in advertising, and we devote \$300 of it to finishing off a new advertising office in our building, \$200 to buying equipment for it, and the rest to advertising expense.

(h) The experiment proves a failure, for the advertising yields virtually no result.

15. From the following information about purchases and sales for a fiscal period construct what you can of an operating statement and show the profit on sales. Purchases are \$400,000; returned purchases, \$40,000; discounts taken, \$7,500; unexpired discounts available, \$3,000; merchandise inventory beginning, \$100,000; merchandise inventory end, \$150,000; sales, \$350,000; returned sales, \$10,000; discounts given, \$3,000; unexpired discounts offered, \$1,500.

16. The following were the ledger balances of the H. Company, Dec. 31, '18:

Capital Stock		\$100,000
Accounts Payable		20,000
Notes Payable		10,000
Cash	\$ 20,000	
Mdse. Inventory, 1/1/18	20,000	
Purchases	120,000	
Sales		140,000
Returned Sales	1,000	
Real Estate	40,000	
Interest Charges	1,000	
Insurance Prepaid	1,000	
Rental Earned		1,000
Commission Charges	2,000	
Taxes	500	
Depreciation	1,000	
Allowance for Depreciation		4,000
Wages	12,500	
Surplus		4,000
Accounts Receivable	60,000	
	<u>\$279,000</u>	<u>\$279,000</u>

The following have not yet been adjusted on the books: interest liability, \$500; insurance unexpired, \$600; commission earned, \$400; wages liability, \$1,500; estimate of uncollectibility of accounts receivable, \$2,000; inventory of merchandise, \$30,000; theft from the warehouse on the night of December 31 after the inventory had been taken, \$1,000.

Construct the operating statement for the year 1918.

Is the following balance sheet consistent with your income sheet?

Cash	\$20,000	Capital Stock	\$100,000
Merchandise	20,000	Accounts Payable	20,000
Accounts Receivable	58,000	Notes Payable	10,000
Real Estate	40,000	Accrued Liabilities	2,000
Insurance Prepaid	600	Allowance for Depreciation	4,000
Commission Accrued	400	Surplus	12,000
	<u>\$148,000</u>		<u>\$148,000</u>

If it is not consistent, why? If it is, explain where the figure for surplus comes from.

## CLEARING ACCOUNTS

17. Show the merchandise clearing account for the transactions in Problem 15, above.
18. From the following information about the transactions of a business, construct clearing accounts for merchandise, for trading, and for income, and the proprietor's drawing account.

Inventory, Jan. 1, 1920, \$40,000; Purchases, \$150,000; Sales, \$187,000; Inventory, Dec. 31, 1920, \$30,000; Rent Charges, \$3,000; Wages, \$10,000; Insurance Charges, \$300; Depreciation, \$1,000; Advertising, \$2,000; Losses from Bad Debts, \$1,500; General Expenses, \$2,700; Dividends on Stocks Owned, \$3,000.

19. Four departments of a store bear the charges for heat, light, and elevator service, in the following percentages:

	<i>Heat</i>	<i>Light</i>	<i>Elevator Service</i>
Department A	30%	15%	40%
Department B	15	25	10
Department C	40	35	30
Department D	15	25	20
	<u>100%</u>	<u>100%</u>	<u>100%</u>

Show the clearing accounts for distributing the following charges to these four departments: fuel, total cost \$3,000, equally divided between heat, light, and elevators; maintenance of heating pipes, radiators, etc., \$300; maintenance of lighting wiring, fixtures, etc., \$500; maintenance of elevators, etc., \$650; wages for supervision of heating, \$500, for supervision of lighting, \$600, for elevator service, \$4,500; power-plant wages, \$2,800, power-plant maintenance, \$1,500, power-plant supplies, \$500, the last three to be divided equally between heat, light, and elevators.

20. (a) Why cannot Allowance for Discounts Offered have a debit balance?
- (b) At the end of a period, discounts offered to customers on bills sent out but not yet due were \$1,300, and discounts available on bills owed by the firm but not yet due were \$1,200. During the next six months discounts given to customers amounted to \$2,200, of which \$800 were on bills of the preceding period and \$1,400 were on new sales; and discounts were taken by the firm amounting to \$3,500, of which \$1,100 were on old bills and \$2,400 on new. Discounts offered to customers in the six months were \$3,700, of which \$700 are on bills not yet collectible even under the most favorable terms; and discounts available to the firm within that period were \$5,600, of which \$3,000 are on bills not yet due even under the most favorable terms offered to it. Show the full entries suggested in the text with respect to discounts for (1) closing the old books, (2) entering the transactions of the six months, (3) closing the books at the end of the half year.

## CHAPTER IX

### THE FUNDAMENTAL PRINCIPLES OF BOOKKEEPING METHOD

**Original Entries.** We have seen that some device is necessary for convenient entry to the many accounts affected by the innumerable transactions of modern business. Sometimes a single transaction needs record on half-a-dozen accounts or more, and if any of these is neglected not only is that account false from that point on but the general scheme of things is upset. A method is needed that not only will assure us that everything required for any account actually gets carried to that account, but will enable us if anything goes wrong to trace the error back to its source. Under adequate bookkeeping methods, therefore, no items are entered directly to the ledger without a preliminary record of some sort as a basis for the ledger item. These preliminary records are called "original entries," and the items in the ledger are called "postings." The original entry may be in a bound book, a loose-leaf book, or in a document kept in an orderly file; but it must be available for reference to support and explain the posting made from it, and it must indicate the accounts to which posting was made from it. The posting, too, must indicate the original entry from which it was made. The posting, or ledger item, is very brief, usually without detail or explanation, but the original entry is either complete in detail or gives references to records or documents in which complete details may be found. The observance of this is important, for one must realize that the ledger is intended to give summary information only, totals or balances, whereas for many business transactions great detail of record is necessary and should not be scrimped. Since, too, the ledger brings together all items relating to one aspect of the business, it serves as an index to the details of the business; for, as we have seen, each ledger item shows where the original entry can be found. In other words, there are two records of every transaction, one of original entry in detail, with a reference to the summary record so that we can trace the effect of the transaction into



the total and the balance of each account concerned, and the other in the ledger, affecting the balances and the totals of the accounts concerned, with a reference to the original entry from which these postings were made; and then in case of error, or suspected error, it is possible to check one against the other and satisfy one's self what is right.

**Ledger Form.** Many forms of ledger are in use, but the simplest and most common has the page divided into similar halves, with ruled space in each half for four things: date, brief explanation, reference to original entry, amount. Thus, if on April 29 we sold Arthur Gordon some goods for \$100.00, and the original record was on page 24, and on July 1 he paid \$75.00 of the amount and the original record was on page 88, the ledger for his account would appear as follows:

ARTHUR E. GORDON							
1920					1920		
April 29	Merchandise	24	100	00	July 1	Cash	88 75 00

Here is full summary information regarding his relations with the business, with full reference to the record of details. If one is tempted to ask why the details are not shown here, thus eliminating the need of the original entries, a sufficient answer is that always a transaction involves two accounts, as we have seen, and often more than two, and that, therefore, the plan of posting details into the ledger would involve writing them at least twice, whereas by this method one writing of details serves all purposes, however many may be the accounts concerned. Many bookkeepers do not use the explanation column at all. A convenient method, which makes little work and gives much information, is to use for explanation the name of the "other account" concerned in the transaction, that is, of the account credited when this account was debited, or vice versa. Usually all transactions on the same side are similar, and hence after an account is started ditto marks serve for explanation of most items, but exceptional items (and those are most likely to need later reference) will stand out conspicuously as they should. That is the form of ledger used chiefly in this book, though other forms will be referred to later. As much space will be provided for each account as the

bookkeeper estimates is necessary to accommodate the probable postings for a long period, a page, half a page, or what not.

**Ledger Balances.** We have already observed that for our balance sheet we wish to use ledger balances, or net figures, and for statistical information we may wish to use ledger totals. When we desire totals, however, we usually wish them for a definite period and we wish to exclude totals of earlier periods. We need a device, then, that will enable us to get easily both totals for any period and balances as of any day. This is supplied by the common method of "balancing" an account. To "balance an account" is to show on the account itself as a specific figure the balance at the time of balancing, or to show that the account has no balance at that time. The method is not subtraction but addition; it consists not in subtracting the smaller side from the larger, for we do not wish to mingle subtractions and additions on our ledger, but to add to the smaller side enough to make it equal to the larger, and in that way indicate how much larger is the larger side. The method is like that commonly used in "counting change"; in counting out the change to give a customer who has rendered a dollar bill for a purchase of sixty-one cents, the cashier does not subtract sixty-one from one hundred and then count out thirty-nine; she adds to sixty-one enough to make one hundred, as four to sixty-one to make sixty-five, ten more to make seventy-five, and then twenty-five more to make one hundred, though she may prove her work by subtracting and seeing that the change equals the difference. So in balancing an account, say Cash, if the credit side is \$615.94, and the debit side is \$718.99, \$103.05 is entered on the credit side to make that side as large as the debit, and that item preserves the balance as of the day of balancing. This, however, is obviously not all that is to be done, for the account is now not indicative of the status of this aspect of the business unless we have clear indication that the balancing item of \$103.05 is not a new item but is only another expression for the items already on the ledger — that is, that it expresses in final summary, or net result, all that the other figures have already expressed. We must make clear that the account is not now without balance, as it appears to be with debits and credits equal, but has a balance of \$103.05, and we must make sure that this amount not only gets

upon our balance sheet but goes down on the ledger to the next period as the opening figure inherited from the old period. We may also wish to preserve the total figure of the old period. We can accomplish both of these ends by the simple device of showing the total of both sides of the account directly on our ledger, and then repeating the balance below on the side where it belongs, as the first item of the new period, thus:

CASH	
718.99	
<hr/>	
718.99	
Balance	103.05
	<hr/>
	615.94
	Balance
	<hr/>
	103.05
	<hr/>
	718.99
	<hr/>

It will be observed that the first writing of the balance is on the side where it does not belong, for the purpose is to show how much is necessary to add to that side to make it equal the other; that the total is then taken to show that the figuring of the balance is correct, and to give the statistical figure of the total volume of business in this respect; that the total is entered on the same line on both sides, to show a fresh start on both sides at the same point; and lastly that the balance is brought down, below the total, on the side which is in excess, where, of course, it belongs as the opening item for the new period. The closing balance (that is, the item inserted on the smaller side) is commonly written in red ink to distinguish it from postings or original items, for, as we have seen, this is not a new item but a summary of old items already on the books; but the opening balance brought down to the new period of course has full validity now that it wholly supplants the old items by starting a new period, and hence should not be distinguished from other items except by indication that it is a summary of old items, as is done by the word "balance." The ruling just shown is typical. A single horizontal ruled line indicates that an addition or a subtraction is performed at this point (though in ledgers subtractions are not performed), and a double horizontal ruled line indicates that the process goes no farther (usually because equality is attained at that point) — though the process may be started afresh below. Here, for instance, the single horizontal line shows that the total of the period is now taken, and the double line shows that a new period



begins here and hence addition will never again go above this point. If one wished the total of several periods for a statistical figure, one would take the sum of totals for those periods and disregard individual items. Balancing may be done whenever convenient, of course; but when statistical figures of totals for definite periods are desired, convenience may require that balancing be not done except at the end of each period.

**Form of Original Entries.** Posting (entering in the ledger) from original entries is an important part of a bookkeeper's work, for final conclusions about the business are always drawn from figures of totals or balances, and as these are taken from the ledger the postings should be absolutely accurate. The task of the bookkeeper in making postings must, therefore, be made as easy as possible, else errors will creep in. Indeed, posting should be made automatic and mechanical as far as possible. If thought and analysis and careful record are given in original entries, no need remains for anything but speed and accuracy in posting. Hence the original entry should be so arranged that the bookkeeper can see at a glance just what is to be posted, and to what accounts posting is to be made. Except that the record must be expressed clearly enough to be intelligible to a competent reader, this is the only requirement of original-entry form. The simplest form of record is that of a diary, or day book, in which the transaction is described with all the detail that any one is likely ever to wish to know about it, such as quantities, rates, number of freight car in which shipment was made, persons concerned, etc. To post from such a record, however, picking out the amount to be posted to each of various accounts and making sure not only that none is forgotten and none is posted twice but also that all intended to be posted are actually posted, is difficult. A device for listing all items to be posted, with the names of the accounts and the amounts, and a provision for checking the items when posting is completed, becomes almost a necessity — at least if one is to work rapidly and trace errors when they occur, as they do occasionally in every office. The time spent in listing the postings to be made and checking the items on the list when made is far less than the time that would be required to analyze the record again if any question should arise and to hunt for omitted

postings and find duplicated postings if no check list were kept. Accordingly every record in a book of original entry has provision for such a check list, which is usually called the "journalization."

**Journalization.** Suppose, for example, a partner comes into a business and as his contribution to its capital transfers to it a building worth \$50,000. The diary or day-book portion of the entry would read somewhat as follows:

April 1, 1923

James Munroe entered the firm to-day as a partner, under the co-partnership agreement of this date, investing real estate of a value of \$50,000, as per deed recorded at the office of the Register of Deeds, Middlesex County, Volume 615, Folio 271.

The journalization would usually be written in direct connection with the diary record, either above it, below it, or alongside it, in form somewhat like this:

		Real Estate		50,000		50,000	
		To James Munroe					

**The Journal.** When the detailed portion of the entry and the journalization are combined in this fashion, the book of original entry is usually called the "journal." The amounts debited are usually written in the left column, and the amounts credited in the right. The account or accounts to be debited are usually named first, followed by the names of any accounts to be credited; these last are usually indented and are often prefixed by "To" as a special indication of the fact that each item is a credit. This arrangement is not necessary, however, for great flexibility is found. Any other form will do if it is convenient for rapid and accurate posting, and this means that it must clearly show three things: what accounts are to have postings, what amounts are to be posted to each, and whether the postings are to be debits or credits. As we go on to labor-saving devices, we shall see that innumerable variations of this form are not only acceptable but desirable. The form given above is simply the standard form requiring no labels on any item, whereas variations from this form may require labels attached to each item so that the bookkeeper may not become confused. The column before the names of the accounts is for the posting check, to indicate that the posting has or has not actually been made. Commonly the ledger page num-

ber of the account to which posting is made is used as a check mark (and the column is called the "ledger-folio" column [L.F.]) — and it must never be checked until the posting has actually been made, as interruption of the bookkeeper just prior to posting may cause the item to be omitted altogether from the ledger.

**Complete Record.** The three records so far discussed give us a complete bookkeeping story, and no variations can satisfactorily do less than this, nor can they do more — except to give auxiliary information of a statistical nature not contemplated usually under the head of bookkeeping. We have either the full detailed story or a reference to a documentary record in the original entry; we have a summary of it in journalization form, with indication of just what amounts have been posted to each account concerned; and in the ledger we have the transaction split up into its parts, so to speak, and each part carried to a new place where it will join other similar parts from other transactions and show the net effect and the total effect of all such parts on each particular phase or aspect of the business. In the books of original entry transactions are recorded chronologically and the parts are kept together as units or entities, and each transaction is recorded without relation to any other transaction; but in the ledger the parts of each transaction are distributed and placed not with other parts of the same transaction, but with the parts of other transactions that have to deal with the same general phase or aspect of the business. If twenty transactions have to do with purchases for cash and twenty with sales on account, forty original records will be required as forty entities on the books of original entry; but on the ledger only three accounts will be concerned, Cash, Merchandise, and Accounts Receivable, and the postings to these three accounts will cover the whole ledger story. There will be twenty debits to Merchandise, twenty credits to Merchandise, twenty credits to Cash, and twenty debits to Accounts Receivable. In other words, the original entry makes a unit of classification of each transaction, but the ledger makes a unit of classification of each phase or aspect of the business; and the original entries may have many units while the ledger has few, or the original entries may have few while the ledger (if the original entries involve many varying parts) may have many. In any case, however,



the same facts are recorded, and the difference lies in the arrangement or grouping of items.

**The Entry.** Heretofore the word "entry" has been used without definite statement of meaning, as if it indicated merely "record." Properly, however, it should always contemplate a complete record, which embraces full explanation and all necessary debits and credits for any transaction; and hence neither a debit nor a credit can be an entry, for an entry always involves an equation of debits and credits. Since, however, the detailed diary portion of an entry does not usually give rise to any difference of opinion or involve accounting difficulties, the term "entry" as we shall use it hereafter in this book will usually refer to the journalization portion of the entry, or the statement of accounts to be debited and those to be credited, with their respective amounts. The word "entry" is sometimes carelessly used for "posting"; but it is obvious that a posting cannot be an entry, for it takes at least one debit and one credit to make an entry, and a posting can never be both of these at the same time, for, as indicated above, a posting is only one part of an entry purposely split off from the other parts so as to be separately posted in the ledger under a new unit of classification.

**Illustrations.** Now let us observe a number of entries and the posting of their elements. We will use for illustration the transactions given in Chapter VII and make full record, using the form of journal which puts the journalization above the explanation or diary (day-book) portion of the entry, and showing the ledger at the end, pages 151-152. We shall use Loss and Gain instead of Converted Assets for determining our profit at the end.

		JOURNAL	[page 18]		
		July 1, 1923			
3	Cash		8,000	00	
1	To John Smith, Capital				8,000
	John Smith has begun business to-day with a cash investment of \$8,000				
		2			
4	Raw Material		5,000	00	
3	To Cash				5,000
	As per invoices ##1-7 inclusive				
			13,000	00	13,000

JOURNAL ( <i>continued</i> )		[page 19]		
	6			
5	Wages	1,400 00		
3	To Cash		1,400 00	
	Pay roll #1			
	8			
6	Insurance Prepaid	300 00		
3	To Cash		300 00	
	Policy #151,298			
7	Fuel	350 00		
3	To Cash		350 00	
	Invoice #8			
	9			
8	Rent	200 00		
3	To Cash		200 00	
	For month of July			
	10			
9	General Expenses	450 00		
3	To Cash		450 00	
	Reimbursement to J. S. for sundry payments made by him, all chargeable to general expense.			
	20			
10	Royalties	230 00		
11	To Royalty Liability		280 00	
	Royalty accrued on use of machines, payable August 15			
	25			
12	Accounts Receivable	1,700 00		
13	To Sales		1,700 00	
	Sales to date, per Sales Book			
	31			
16	Loss & Gain	4,005 00		
4	To Raw Material		1,500 00	
5	Wages		1,400 00	
6	Insurance Prepaid		75 00	
7	Fuel		100 00	
8	Rent		200 00	
9	General Expenses		450 00	
10	Royalties		280 00	
	To transfer all costs for the month to Loss & Gain			
14	Goods-in-Process	2,205 00		
15	Finished Goods	600 00		
16	To Loss & Gain		2,805 00	
	To credit the latter account for inventories			
13	Sales	1,700 00		
16	To Loss & Gain		1,700 00	
	To transfer sales			
16	Loss & Gain	500 00		
2	To John Smith, Personal		500 00	
	To transfer profit to proprietor			
		13,690 00	13,690 00	

## LEDGER

## JOHN SMITH, CAPITAL

[page 1

					July 1	Cash		18		8,000		00
--	--	--	--	--	--------	------	--	----	--	-------	--	----

## JOHN SMITH, PERSONAL

[page 2

					July 31	Loss & Gain		19		500		00
--	--	--	--	--	---------	-------------	--	----	--	-----	--	----

## CASH

[page 3

July 1	John Smith		18		8000		00		July 2	Raw Material		18		5,000		00
									6	Wages		19		1,400		00
									8	Insurance Prepaid		19		300		00
									8	Fuel		19		350		00
									9	Rent		19		200		00
									10	General Expenses		19		450		00
										Balance		19		300		00
												✓				
														8,000		00
Aug. 1	Balance		✓													
														300		00

## RAW MATERIAL

[page 4

July 2	Cash		18		5,000		00		July 31	Loss & Gain		19		1,500		00
										Balance		19		3,500		00
												✓				
														5,000		00
Aug. 1	Balance		✓													
														3,500		00

## WAGES

[page 5

July 6	Cash		19		1,400		00		July 31	Loss & Gain		19		1,400		00
--------	------	--	----	--	-------	--	----	--	---------	-------------	--	----	--	-------	--	----

## INSURANCE PREPAID

[page 6

July 8	Cash		19		300		00		July 31	Loss & Gain		19		75		00
										Balance		19		225		00
												✓				
														300		00
Aug. 1	Balance		✓													
														225		00

## FUEL

[page 7

July 8	Cash		19		350		00		July 31	Loss & Gain		19		100		00
										Balance		19		250		00
												✓				
														350		00
Aug. 1	Balance		✓													
														250		00

## RENT

[page 8

July 9	Cash		19		200		00		July 31	Loss & Gain		19		200		00
--------	------	--	----	--	-----	--	----	--	---------	-------------	--	----	--	-----	--	----

## GENERAL EXPENSES

[page 9

July 10	Cash		19		450		00		July 31	Loss & Gain		19		450		00
---------	------	--	----	--	-----	--	----	--	---------	-------------	--	----	--	-----	--	----

## ROYALTIES

[page 10

July 20	Royalty Liability		19		280		00		July 31	Loss & Gain		19		280		00
---------	-------------------	--	----	--	-----	--	----	--	---------	-------------	--	----	--	-----	--	----

## ROYALTY LIABILITY

[page 11

									July 20	Royalties		19		280		00
--	--	--	--	--	--	--	--	--	---------	-----------	--	----	--	-----	--	----

## ACCOUNTS RECEIVABLE

[page 12

July 25	Sales		19		1,700		00									
---------	-------	--	----	--	-------	--	----	--	--	--	--	--	--	--	--	--



LEDGER (*continued*)

SALES				[page 13]	
July 31	Loss & Gain	19	1,700   00	July 25	Accounts Receivable
				19	1,700   00
GOODS-IN-PROCESS				[page 14]	
July 31	Loss & Gain	19	2,205   00		
FINISHED GOODS				[page 15]	
July 31	Loss & Gain	19	600   00		
LOSS & GAIN				[page 16]	
July 31	Sundries	19	4,005   00	July 31	Sundries
July 31	J. S., Personal	19	500   00	July 31	Sales
			4,505   00	19	2,805   00
				19	1,700   00
					4,505   00

If we now take our balance sheet we get the following, which, it will be observed, has identical items with that on page 61. The order in which the items appear is somewhat different, because we have here followed the inventory method whereas the other was obtained by the cost-accounting method, and hence the order of entries was somewhat different, and in neither case have we attempted to rearrange our items in any way but have left them as they chanced to come from the entries.

*Balance Sheet*

Cash	\$ 300.00	John Smith (Capital)	\$8000.00
Raw Material	3500.00	John Smith (Personal)	500.00
Insurance Prepaid	225.00	Royalty Liability	280.00
Fuel	250.00		
Accounts Receivable	1700.00		
Goods-in-Process	2205.00		
Finished Goods	600.00		
	<u>\$8780.00</u>		<u>\$8780.00</u>

**Correcting Errors.** Since original entries are, next to original documents, the best evidence of a transaction, care should be taken not to invalidate that evidence by erasures; for no one knows what was erased, and hence no one can tell whether the change was innocent or fraudulent. An original entry should never be erased in a vital part, i.e., names, numbers, items, amounts; but of course posting-check numbers, etc., when only one could possibly be correct, are not vital. The means of cor-

recting an error is either (1) cancelling the original entry and making a new correct entry, or (2) making a "correction entry" which when taken in connection with the original entry will produce the correct net result. In simple bookkeeping such as is described in this chapter the cancellation method is convenient; but in most modern bookkeeping practice entries are not usually in such simple form, and either or both the debit and the credit are combined with other entries in many totals, by methods soon to be described: then cancellation is awkward, and making a correction entry is preferable. The method to be followed will depend on circumstances. If the error is found before the item has been carried farther (combined with other entries, or posted) and is merely clerical in nature, like extending a wrong figure, the proper thing to do is to cancel the wrong item by drawing a line through it (preferably a waving line so that it will not stand out conspicuously on the page) and to insert the correct item above it. Even though, too, the item has already been posted, if it is posted without complication with other entries simple substitution on both the journal and the ledger of the right item for the wrong is adequate. When any correction entry is made, the original entry should be clearly marked "erroneous," with an indication of where the correction will be found, and the correction should clearly state of what it is a correction.

**Correction Entries.** If we find that in charging a customer we have omitted some item, we can correct the error by making a new charge. If the error was in overcharging, we correct it by debiting Sales and crediting the customer. If we charged Smith when we should have charged Brown, we correct the error by now debiting Brown and crediting Smith. If we debited Cash when we should have debited Notes Receivable, we now debit Notes Receivable and credit Cash. Every error is capable of correction by another entry. It should be clearly understood, however, that when a correction entry is made the old entry remains and the new entry is added to it; whereas by the cancellation method the new items are substituted for the old. Great care should be taken in making correction entries, for since they represent not actual transactions which to an experienced person automatically suggest the entries, but purely arbitrary mathematical changes, care-

lessness may escape detection. Subordinate bookkeepers should not make correction entries without the approval of their superiors.

**Loose-Leaf Books.** The books described are not essentially different whether permanently bound or in loose-leaf form. The loose-leaf form makes possible the transfer to a file of all inactive records, thus reducing the bulk to be handled currently. Cards substituted for any type of book serve the same purpose. The limitations on the usefulness of these devices are the awkwardness of having records scattered, and the danger of forgery by substitution of a faked for a genuine "original entry." Further comment on the latter is made at the end of Chapter XI.

### QUESTIONS AND PROBLEMS

1. The following account is found on the ledger of a business.

CASH			
1920			
July 1	Sundries	286	500 10

How should you proceed to get full information about the meaning of the item?

2. What information does the following ledger account give?

SUPPLIES			
1920			
Jan. 1	Balance	✓	150 00
Feb. 1	Cash	10	50 00
Mar. 1	"	12	100 00
Apr. 1	Sundries	16	300 00
June 1	Cash	18	25 00
			<u>625 00</u>
July 1	Balance	✓	125 00

3. If you were to lose the merchandise account from a loose-leaf ledger, how should you reconstruct it? How should you test the accuracy of your work?
4. On March 1, 1920, Brown and Green enter into a partnership agreement under the terms of which they are to share all profits and losses equally. Brown invests \$10,000 in cash; and Green invests \$2,000 in cash, and a \$5,000 note of the National Oil Company due that day and not bearing interest, and \$3,000 in X and Y stocks.

Mar. 1. The partners rent a store from The Realty Company for one month for \$200, and pay the rent in cash. The note of the National Oil Company is paid. Merchandise is purchased from Jones & Co. for



\$10,000; \$5,000 is paid on account. Equipment is bought for cash, \$500, and fittings are bought for cash, \$1,000 — both from Jordan & Co.

Mar. 2. Merchandise is sold for cash to Smith Brothers, \$2,000. Supplies are bought for cash, \$75.

Mar. 4. Merchandise is sold on account, to J. Taylor, \$5,000; for cash, \$2,000. Postage and stationery are bought, \$100.

Mar. 6. Merchandise is bought from Stevens & Son on account, \$10,000. \$5,000 is paid on the purchase of March 1. An express bill for \$70 is paid to the National Express Co.

Make entries for the above transactions and post them to the ledger. In view of the fact that entries are few, use an old-fashioned mixed account for merchandise. [The total debits and the total credits both in the journal and in the ledger are \$65,945.]

5. Brown & Green, proprietors of the business of Problem 4, decide to admit White to the partnership, and therefore it is necessary to bring the books up to the time to show the status of the business.

The bookkeeper finds that two errors have been made. The equipment bought on March 1 was really purchased from Marsh Bros., for Jordan & Co. were only agents. On March 4 merchandise recorded as sold on account was later in the day paid for by a note (payable on demand). Correct these errors.

The inventory of merchandise is \$13,000; one-fourth of the rent has expired; \$75 worth of stationery and postage is on hand; \$50 worth of supplies are on hand, but in addition to those originally purchased \$50 worth have been bought and received, but have not yet been paid for or been entered on the books.

Balance the ledger preparatory to White's admission, and draw up a balance sheet.

6. On May 1 the balance sheet of Johns & Peters was as shown below:

Fixtures	\$ 2,000	J. Johns	\$15,000
Merchandise Inventory	17,000	P. Peters	10,000
Accounts Receivable	23,500	Notes Payable	5,000
Supplies	200	Accounts Payable	15,000
Commission Accrued	700	Rent Liability	200
Cash	1,800		
	<u>\$45,200</u>		<u>\$45,200</u>

Set up the ledger from which this balance sheet was drawn. For the following transactions of the first four days of May make the original entries, post, list the ledger totals of each account, and then add all ledger totals together and see that the debits equal the credits. Use separate accounts for purchases, sales, returned purchases, and returned sales, and use Merchandise as a clearing account.

May 1. Johns & Peters bought merchandise for \$7,000, paying cash for \$1,000 and getting into debt for the rest.

May 2. Johns & Peters collect \$500 of the commission money earned by them in the preceding period. They sell goods for A. An-

draws, collecting cash \$2,000, of which \$1,800 belongs to Andrews and the balance they are entitled to keep as their commission. They pay wages \$300.

May 3. They sell their own merchandise as follows: \$3,000 to M. Mathews on account, \$4,000 for cash (to M. Marks), and \$9,000 for an interest-bearing note, dated May 3, of the Eureka Company. They return \$50 worth of the cash purchases of May 1 and get the money.

May 4. They pay Andrews \$1,800, and sell the note of the Eureka Company for \$9,001. Mathews returns \$100 worth of the goods sold him on May 3. They collect \$3,000 on accounts receivable.

Peters dies on the evening of May 4, and the partnership is thereby dissolved, and the books must be brought up to the time. Wages are accrued to the amount of \$200 to pay and rent \$215 to pay; the fixtures are worth \$2,000, the stock of merchandise \$14,000, and the supplies \$185. All other items are as shown on the books. Complete the entries necessary to indicate all facts ready for the division of profits between the surviving partner and the estate of the deceased partner, and show the balance sheet as of the close of business May 4.

## CHAPTER X

### THE TRIAL BALANCE

**The Purpose.** We have seen from the beginning of our study that assets must equal ownership-claims, and that debits must equal credits. When this equality is not attained, something is wrong. In making entries, great care is taken to provide for every debit an exactly equivalent credit. If no error is made here and no subsequent error is made in posting and in finding ledger totals, obviously the sum of all ledger debits must equal the sum of all ledger credits. If an error has been made in posting a wrong amount, or in omitting a posting, or in making a posting twice, this equality will not be preserved, and the only safe thing to protect one against such errors, and they are easy to commit, is to make a test, by one of the methods discussed later, of the ledger and see that debits actually equal credits. Such a test is called a "trial balance."

**The Necessity.** Under the system of making entries described in the preceding chapter, hardly anything less than carelessness on the part of a competent bookkeeper could lead to an error that could be disclosed by the trial balance; but under complicated systems of bookkeeping using labor-saving devices, as described in the next three chapters, entries are not in conveniently arranged halves, between which any discrepancy is apparent almost at a glance, but are split between many different books and possibly many different columns in different books, and error may creep unobserved into the original entries as well as into the postings. With a multiplication of the opportunities for error, the necessity of protection, through the trial balance, against errors that might otherwise pass undetected is multiplied. The indication of error given by the trial balance, moreover, is nothing more than an indication of error — that is, the failure of the two sides of a trial balance to show equality tells nothing more than inequality of the two sides and existence of error: it gives no information about the size of the error or about the number of errors. A discrepancy, between the two sides, of one cent may



prove to be due to a dozen errors in the books, for five errors on the debit side may amount to omissions of five thousand dollars, and seven errors on the credit side to omissions of five thousand dollars and one cent, and yet the net result will be a discrepancy of one cent only. The trial balance tells no more than that error is there. It does not help, except by giving clues to those who are experienced, in finding the actual errors. Since the number of errors and the total amount of error is not disclosed by the trial balance, it is obviously of the utmost importance that, irrespective of the amount of discrepancy, when the trial balance discloses error the error should be found. To neglect the discrepancy because it happens to be small is to walk in the dark from that point on.

**Limitations of the Trial Balance.** Yet we must not get the impression that a trial balance showing equal debits and credits indicates that the books are right. Not only may many errors be made without disturbing the equality of the two sides of the trial balance, but many kinds of errors may be so made — if they happen to fall just right. Yet a trial balance is decidedly worth while, for the chances are slight that the errors will fall just right to escape detection. Only one error is likely both to be made and to escape detection through the trial balance: if an item is of the correct amount and on the correct side of the account under which it stands, but chances to be under the wrong account, the error may escape notice — for, as it enters into the total just the same whether it is under one account or under another, the only effect on the trial balance is its appearance (alone or in combination with other items) under a wrong title, and the bookkeeper is unlikely to know or to remember what the amount of any account ought to be. So a trial balance that is satisfactory in appearance tells nothing about the correctness of the reported condition of the individual accounts on it; it merely tells that unless an error has been made in carrying an item to a wrong account, the *probability* is that the books are correct.

**Totals or Balances.** So far as the trial balance itself is concerned, it is equally serviceable whether it consists of a list of ledger totals or of ledger balances. The theory of the trial balance is that we test equality of debits and credits on the ledger as

a convenient way of finding probability of error, and therefore all ledger figures are involved. In reality, however, not all ledger figures need to be used, for many of them have already once been subject to that test and may be eliminated from any subsequent test. An account which has been closed, which now has no balance, must have in itself equality of debits and credits (or it would have a balance), and hence may be omitted from all future trial balances (until reopened, of course); for putting it on the trial balance would merely add the same amount to both sides of the trial balance and produce no effect on the test of equality. Similarly, if we use for any account the balance, rather than the total of each side, we are serving the purpose of the trial balance equally well, for the omitted portion of the two sides must be the same (or else the balance used is not the true balance) — that is, if an account has debits of \$300 and credits of \$200, using \$100 on the debit side only is as good as using the total of each side, for the portion omitted is \$200 from each side, and hence the omission does not affect the test of equality of debit and credit. As the trial balance is often kept for reference, because it shows the recorded status of all the accounts as of its date, it may in some cases more conveniently show balances and in others show totals, or for some accounts it may show balances and for others totals.

**Places of Error.** Let us now examine the types of error that are likely to be made and see for which of them the trial balance will detect that an error has been made, and how. It should be realized at the start that an error may be made in any or all of four processes: in making an original entry, in posting an original entry, in figuring the balance or the total of the ledger account, in drawing up the trial balance. So far as “getting a trial balance” (that is, finding equality of debit and credit on the trial balance) is concerned, an error in one of these processes is as bad as in another, and the trial balance will detect that it exists as well if it is made in one as if it were made in another. These errors are not equally serious in themselves, however, for some of them have other detectors than the trial balance, and therefore might not go permanently undiscovered if the trial balance did not disclose them. The most serious errors, of course, are in original entries, for these will stand unless challenged from outside — that is, they

have no internal corrector on the books themselves. Next most serious are errors in posting, for they will stand unless challenged from outside or by comparison with the original entries — though they have a corrector in the original entries if any one chances to compare them with the original entries. Less serious are errors in figuring totals or balances on the ledger, for evidence of their incorrectness is immediately at hand in the figures which were added or subtracted, and they are also subject to comparisons with the original entries, and to challenge from outside. Least serious are errors in drawing up the trial balance itself (and these errors are more numerous than the uninitiated would suspect), for they form no part of the permanent record on the books, and are also subject to the three detectors already mentioned — comparison with the ledger from which they were taken, comparison with original entries, and challenge from outside.

**Addition and Subtraction.** Perhaps the commonest error is in addition or subtraction. If an original entry consists of several items on either side and one or more on the other side to equal a group on the first side, and then an error is made in adding the items of the group, the debits will not equal the credits. In the simple type of bookkeeping so far discussed this ought not to occur, for with the debits and credits contiguous the discrepancy should be observed by addition of the two columns of the journal before posting is made; but under highly developed systems the detailed items may be posted from several books on many occasions and the total from still a different book. If an error is made in finding the total or balance of the ledger, too, though the postings themselves may be correct, the figure used in the trial balance (taken from such total or balance) will be wrong and throw out the equality of debit and credit. Finally, if all the figures on the books are correct but the columns of the trial balance are improperly added, the equality of debit and credit is destroyed. In case of error in addition or subtraction the trial balance should disclose error — but it won't, of course, show what the error is, or even of what type it is. The only case in which disclosure of error would not be made is that in which two or more errors exactly offset each other. Obviously the offsetting error need not be of the same type; for a \$50 omitted posting from either side would



cancel an error of addition which omitted \$50 from the other side, and a double posting of \$50 on either side would cancel an omission of \$50 by erroneous addition on the same side.

**Careless Copying.** The next most common error is probably due to carelessness (though sometimes it is due rather to insensitive eye or ear or to inaccurate memory than to true carelessness). A figure is read wrongly, or heard wrongly, or remembered wrongly, or written wrongly. It is easy to write \$1.10 for \$110, \$1.53 for \$1.35, \$2.68 for \$20.68. If the error is made in the original entry on both sides, the trial balance will not disclose it, for debits and credits will still be equal; but if it is made on one side only, or in posting one side only, or in entering ledger balances, or in entering items on the trial balance, the trial balance should show that error has been made — unless, of course, the error is offset by another error.

**Omissions and Duplications.** It is not common inadvertently to omit or to duplicate part of an original entry, even when parts are scattered, if one has a systematic method of entry; but a little carelessness in posting may easily lead either to omission or to duplication on the ledger, for posting is a mechanical process involving little consciousness of the significance of what is posted; and hence posting checks should always be made as soon as a posting is made and never before. A common error is failing to observe some item in figuring ledger balances — as when an account has, say, twenty debits and only one credit, and the credit is overlooked in finding the figure for the trial balance. Almost equally common is failing to observe some account in drawing off the trial balance from the ledger. Any one of these errors (of original entry, on the ledger, in finding ledger totals and balances, and in drawing off the trial balance) will cause the trial balance to show that error has been made — unless it is offset by another error or errors.

**Confusing Debits and Credits.** If an item is debited to an account when it should be credited, the equality of debits and credits is thrown out, unless the other half of the entry is also reversed — in which case the trial balance cannot disclose error, for equality is preserved. This will be true whether the error is in the original entry, in posting, or in drawing off the trial balance.

**Confusing Accounts.** If an item is carried to a wrong account in an original entry, the chances of detection are few except from causes outside the books — as some one's observing that the record does not agree with the facts, — for the trial-balance equality of debit and credit is not affected, and there are no previous book records. Virtually the same thing is true of a confusion between accounts in posting: here a chance (or intentional) comparison with the original entry would show the error, though the trial balance would not. A confusion between accounts on the trial balance itself (attaching the wrong name to an amount) would do no harm so far as the trial balance itself is concerned, for equality of debits and credits is not affected; but if the trial balance were used for reference, to show how certain accounts stood at a certain time, it might do much harm. Hence, all things considered, the greatest care must be taken to see that entries do not get made to wrong accounts, for detection is improbable through ordinary routine bookkeeping procedure.

**Finding Errors.** As already indicated, the trial balance gives indication of most errors, but gives no indication of the number of errors, the kind of errors, the amount of the errors, or the accounts which are wrong. To find errors is often the most difficult task of a bookkeeper. Of course the obvious thing is to go over all the work again, though perhaps reversing the order of procedure — adding the trial balance, comparing the trial balance with the ledger totals or balances, refiguring ledger totals or balances, checking all the postings, examining all the original entries. This, however, is not the usual procedure; for certain errors are more probable than others and might be looked for with less work than others, so that less work is wasted if the error is not of that sort. The order of procedure will therefore depend on circumstances, and need not be discussed in detail here. A few general cues for looking for error are suggestive, however. Sometimes mere inspection of the trial balance will show that some account has been placed as a credit when it clearly must be a debit, or that the amount is impossibly large or small. If the difference between the debits and the credits of the trial balance is one digit only, as Dr. \$156,814.23 and Cr. \$158,814.23, there is a probability that the error is due to carelessness somewhere in addition or sub-

traction. If it is divisible by two, it may be due to carrying some item to the wrong side (for that makes one side too small and also the other too large by the same amount, and so doubles the discrepancy) — though it must be remembered that half of all conceivable numbers are divisible by two. If the discrepancy is divisible by nine, there is a probability that the error is due to careless use of the decimal point, as with \$1.10 for \$110, or transposition of figures, as with \$1.53 for \$1.35, or omitting or inserting ciphers, as with \$2.68 for \$20.68, or *vice versa*. Yet however many hints one gets of where the error may be, all may be deceptive and a long search may disclose an unusual sort of error. Sometimes discrepancy persists even after checking over all the work carefully and making sure that no errors have been made. The natural conclusion is that this month's entries and postings (assuming that a trial balance is taken monthly) are correct but that two errors made last month offset each other and hence were not detected, and that on this month's trial balance one of them was not repeated and consequently the other was left unmated and disclosed. Then the error in last month's books must be found. An error on the books offset by an error on the trial balance is thus less serious than one offset by another error on the books; for the former will be found sooner or later when a trial balance on which the offsetting error is not made will show that something is wrong, whereas the latter may never be discovered.

### QUESTIONS AND PROBLEMS

1. Assuming that each balance on the following trial balance is entered to the right account, find the actual and the probable errors, and show the presumably correct trial balance.

Cash		14,930
Partner A (Investment)	9,975	
Partner B (Investment)		10,000
Interest		8
Equipment		430
Advertising	90	
Commission		457
Merchandise		1,122
Real Estate	11,500	
Accounts Receivable		1,150
Accounts Payable	6,520	
	<u>28,085</u>	<u>28,097</u>



2. If you were the manager of a business and wished to see the trial balance in order to determine your business policy, should you wish the trial balance to be made up all of ledger totals, all of ledger balances, or in part of ledger totals and in part of ledger balances? Should you wish entered on the trial balance totals of accounts which at the time of taking the trial balance have no balances? Why or why not?
3. You find a discrepancy in your trial balance. You then again add all postings of the current month to the ledger totals at the end of the previous month and find that the new totals are in agreement with your trial-balance figures. Next you check all postings with the original entries for the month, but find no error. Lastly you examine the original entries for the month, and find them to be correct. Should you abandon your hunt for the discrepancy? If not, what should you do? If you should abandon the search for the discrepancy how should you put the books again in balance?

## CHAPTER XI

### THE PRINCIPLES OF LABOR-SAVING DEVICES IN BOOKS OF ORIGINAL ENTRY

**The Special Column.** A glance at the journal given in Chapter IX, page 150, shows that many postings have to be made to the credit of Cash. This suggests that any device for segregating the credits to Cash, so that one posting of the total might serve, would be worth while; for, since the ledger is not intended to show details, one posting of totals will do as well as a separate posting for each payment. An obvious device for this purpose is a special, or second, credit column, in the journal, in which all amounts to be credited to Cash may be entered and be thus temporarily segregated. The total of this column will then be taken whenever postings are to be completed, and the amount of the total will be posted to the credit of Cash. At the same time this total will be extended into the other credit column in the journal, from which the items extended into the cash column have been omitted, in order that we may prove our work by seeing that our total debits equal our total credits. Instead of the journal page shown on page 150, then, we shall have a page of three columns; and at the end of each page the totals must be carried over, so as to get the totals for cash and for proof. This gives us the following final figures:

3	Cash, Cr.		7,700 00	7,700 00
		26,690 00	26,690 00	7,700 00

One posting as a credit to Cash takes the place of six, and would equally well take the place of five hundred if there were so many items during the period at the end of which it is desirable to have the ledger brought up to the times. As a protection against misunderstanding, however, it would be undesirable to have the posting check, or ledger folio, appear opposite each item of cash as well as opposite the total; the journal should show on its face that not the individual items but the total only has been posted. Leaving the space blank, however, is confusing; for the book-keeper is going to be bothered by the constant suggestion, through the blank spaces, that some postings have been missed: posting is not usually done consecutively, item by item, for it is a saving

of labor to skip about on the journal in posting and, while one has page 3, for instance, of the ledger open, to post all items belonging on page 3, and then check them in the journal as posted. The confusion of skipped spaces is avoided by using a blank check (✓) to indicate that though posting of this individual item is not made, its posting is provided for elsewhere — as here by the posting of the total of the column. Then the eye of the bookkeeper is able to see at a glance whether all items to be posted have been provided for.

**Wide Applicability.** In the transactions of Chapter IX, which we have just used for illustration, the disbursement of cash happens to be the only kind of transaction occurring often enough to make a special column worth while. In reality, however, the expenses and sales would usually each comprise many items instead of one, and therefore each could well be given a special column. To see further use of the special column, let us suppose that we have a large number of transactions within a short period, of which many are of a kind, like expenses paid in cash, purchases for cash, sales on account, and collections of accounts. Simplifying the entries by omitting the detailed or explanation portions and showing the journalization only, we may get the following:

Cash Dr.	Accts. Rec. Dr.	Pur- chases Dr.	Ex- penses Dr.		Sundries Cr.	Sales Cr.	Accts. Rec. Cr.	Cash Cr.
		1,000 00	✓	April 29				
			✓	Purchases				1,000 00
			500 00	To Cash				
			✓	Expenses				500 00
			✓	To Cash				
	3,000 00		✓	Accounts Rec.				
			✓	To Sales		3,000 00		
8 00			✓	30				
			15	Cash To Com'n.	8 00			
5,350 00			✓	Cash				
			✓	To Accounts				
				Rec.			5,350 00	
50 00			✓	Cash				
			16	To Interest	50 00			
		3,000 00	✓	Purchases				
			✓	To Cash				3,000 00
		4,000 00	500 00	18 Expenses, Dr.				
			4,000 00	21 Purchases, Dr.				
	3,000 00		3,000 00	25 Accts. Rec., Dr.				
			5,408 00	9 Cash, Dr.				
5,408 00				22 Sales, Cr.	3,000 00			
	3,000 00			25 Accts. Rec., Cr.	5,350 00	3,000 00	5,350 00	
				9 Cash, Cr.	4,500 00			4,500 00
			12,908 00		12,908 00			



It will be observed, first, that however many entries there might be, even several hundred, no more postings would be required if all the additional items were to be entered in the special columns already provided; for though the totals would be increased in size, no more totals would need posting. It will be observed, secondly, that one column is not posted in total, for it is not a special column; i.e., it is marked "sundries," and is to take miscellaneous items too infrequent to be worth the trouble (or space) of providing with special columns. Items in that column cannot be posted in total, for they are dissimilar, to be posted to different accounts, and hence must be posted individually as in our original journal shown on page 150. Normally when this book, called a "special-column journal," is used, a sundries column would be provided on the debit side also; but our transactions in this case did not require it. The placing of the journalization (and explanations of detail) in the middle of the page is purely for convenience. The form has utmost flexibility. If so many columns are used that too much space is taken at the end in summarizing them, as shown above, all the totals may be taken on the same line; and the posting from each may be made directly without label, with the ledger folio for posting check written beneath each total (usually enclosed in a circle or oval to distinguish it from financial figures). The total of all columns of each side should be taken and shown somewhere, however, to give assurance (by proof) that the debits equal the credits.

**Extension of the Principle.** The form just shown may easily become very cumbersome if so many accounts have frequent items that many special columns are worth while. It is notable that most transactions fall within certain well defined groups, and certain combinations of debits and credits virtually never occur. Expense accounts are virtually never directly connected in the same transaction with purchases and sales, for instance. When our columnar journal is in danger of becoming too cumbersome, therefore, we may split it and put in separate volumes certain columns that commonly are used together. It is common, for example, to put into separate books all cash transactions (into what is called the "cash journal" or "cash book"), all purchase items (into what is called the "purchase journal" or "invoice book"),

and all sales (into what is called the "sales journal" or "sales book"). Then in each may be put such special columns as are likely to be useful, and in each may be a sundries column that will take care of items which must be posted individually because they are too infrequent to have special columns for posting in total.

**The Cash Book.** The cash book should have in it all cash items, for, though of course cash items may perfectly well be posted from other sources, it is desirable to know that all cash items are in one place not only in summary (as in the ledger) but in detail for inspection and reference, and ready for finding instantly the cash balance. In order to keep the debit and credit sides in juxtaposition, for ease in finding the balance at any time, entries involving debits to cash are usually written on the left side (as the book lies open) of the cash book, and credit entries on the right; and whenever the balance is entered, in fashion similar to that of balancing a ledger account as shown on page 145, a fresh start is made on the two pages side by side on corresponding lines. It will be noted that by the very theory of the book all items in this book are cash items. Hence it is unnecessary to provide in it any columns for Cash, for the left side of the book is itself a whole page of Cash debits, and the right side is a whole page of Cash credits. We have therefore eliminated not only two columns, but the writing of all items that would go into such columns if cash items were entered in the columnar journal as previously shown. Let us observe an illustration, using the same items as on page 166.

### *Cash Receipts*

			<i>Accts. Rec'ble</i>	<i>Com- mission</i>	<i>Sun- dries</i>
April 30	✓	Commission		8 00	
	✓	Accounts Receivable			
16		Interest			50 00
25		Accounts Receivable	5,350 00		5,350 00
15		Commission	5,350 00		8 00
9		Cash, Dr.		8 00	
May 1	✓	Balance			5,408 00
					908 00

\* 1 It is usually desirable to handle such items individually as well as in total, and this will be discussed in the next chapter.

*Cash Disbursements*

				<i>Pur- chases</i>	<i>Ex- penses</i>	<i>Sun- dries</i>
April 29	✓	Purchases	Invoice #88	1,000 00		
	✓	Expenses	Sundry items, Vo. #24		500 00	
April 30	✓	Purchases	Invoice #118	3,000 00		
	21	Purchases	total for month	4,000 00		4,000 00
	18	Expenses	" " "		500 00	500 00
	9	Cash, Cr.	" " "			4,500 00
	✓	Balance				908 00
						<u>5,408 00</u>

It will be observed that here the totals of special columns are carried at the end of the period into the sundries column so that cash totals may be shown. The journalization, in the first text column, is incomplete, for the fact that Cash is to be debited or credited is apparent from the presence of the item in this book, and the page (left or right) indicates whether a debit or a credit is to be given. The explanation portion of the entry, written on the same line in the next column, is directly attached to the journalization and hence is very conveniently placed. At the foot of each page the posting to be made to Cash is specially labeled, for it is the complement of all other postings from that page, and to make easy work for the bookkeeper or posting clerk a reminder should catch his eye that at this point he is to stop posting credits and post a debit, or *vice versa*.

**Cash-Book Balances.** Each month's record of cash must begin with the cash on hand left over from the preceding month; but this clearly must not be debited to Cash at the end of the new month, for it has already been debited in the month in which it was received. In finding the total to be posted as a debit to Cash at the end of the month, therefore, the balance brought over at the beginning must be omitted. A convenient device is a special column for the balance, which then may be added to the receipts after the total has been found. Another convenient device is to subtract the old balance in short-extension from the total which includes it, and indicate that the amount to be posted is the difference. In the form shown above, for instance, the new balance for May 1 is \$908. If the receipts for May should be \$7,000, the total of the sundries column, after special-column totals were carried to it, would be \$7,908, but only \$7,000 should be posted



as a debit to Cash. To indicate this, the last line for May might read as follows:

9	Cash, Dr.		Total Old Bal.	<u>7,908.00</u>	7,000.00 to post						<u>7,908.00</u>
---	-----------	--	-------------------	-----------------	------------------	--	--	--	--	--	-----------------

This inconvenience of arrangement is avoided when the cash book is used itself as a ledger account, as many bookkeepers use it, and no cash is kept in the ledger. Since the purpose of the ledger is to classify items so that we may get totals and balances, and since the cash book has already got totals and balances, nothing more is necessary for cash record. The only advantage of having a ledger account for cash is that then the ledger is complete and the item of cash is less likely to be forgotten in drawing up a balance sheet or trial balance; and the labor of posting cash monthly (it is seldom posted oftener) is negligible. Whether one shall carry a ledger account for cash in addition to a cash book is, then, a matter of taste and not of principle.

**Cash-Book Ruling.** It is, as we have seen, desirable to have both sides ruled up on corresponding lines, for since usually the number of receipt items does not closely follow the number of disbursement items the current position for one side is constantly running ahead of the position for the other side, and it is inconvenient in finding balances to have the positions far apart. This means that on one side or the other when the balance is entered and the totals, for equality, are shown, blank lines are left on the side with the fewer items. These have sometimes proved tempting to dishonest bookkeepers or cashiers, who have inserted fictitious entries and thereby hidden tampering with cash. Many bookkeepers rule diagonal red lines across such blank spaces to cancel them. Such lines, when they run at various angles as they usually do, are unsightly. A substitute is to take the total of each side of the cash book on the first line available, regardless of the relative position of the two sides, thus closing each side from new entries, and then on the side with the blank space repeat the total on the line opposite the total of the other side. Then no insertions can be made without advertising the fact that they were made after the total was taken.

**The Purchase Book.** It is customary similarly to keep a separate book for purchases of merchandise, for such transactions

involve an almost constant set of relations that are not usually involved in other transactions — chiefly debits to Purchases and credits to Accounts Payable. Indeed, the purchase book as a whole is virtually one entry, equivalent to a single journal entry:

Purchases  
To Accounts Payable

So far as purchases are of this normal type, obviously the purchase book can consist merely of a list of purchases, summarized at the end of the period into a single entry as indicated above, and that entry can be posted from the purchase book or entered in the journal and posted thence, as one may prefer. As a matter of fact, however, sometimes other kinds of purchases are made, as for cash or for notes payable, and therefore the purchase book must provide for credits to other accounts than Accounts Payable. This is most conveniently accomplished by providing for two columns, one for Accounts Payable, the total to be posted to the credit of that account, and the other for sundries, which will be individually posted. The sum of the two columns will then be posted to the debit of Purchases. The method of handling the postings is indicated by the form below, which illustrates only a few typical items.

			<i>Accts. Payable</i>		<i>Sun- dries</i>	
Apr. 29	✓	Accounts Payable	J. Smith <sup>1</sup>	Invoice #6841		
	✓	Accounts Payable	J. Jones <sup>1</sup>	" #6842		
	32	Notes Payable		" #6843		
30	26	Accounts Payable	total			
	21	Purchases, Dr.				
					1,087	50
					1,138	30
					2,225	80

<sup>1</sup> The handling of the items of J. Smith and J. Jones individually will be discussed in the next chapter, for we are here concerned with Accounts Payable as a whole and not with the individual details of which our debts are made up.

If the business is divided into departments, a special column (and separate account) is provided for the purchases of each department, increasing the number of debits but not affecting the credits.

**The Sales Book.** Absolutely the same principle applies to Sales. They are involved in but few kinds of transactions, and the items involved are not usually involved in other transactions: so sales may well be handled in a separate book, really a subdivision of the journal, sometimes called the Sales Journal. The handling is identical with that of the purchase book — except, of course, that things are reversed, i.e., Accounts Receivable is debited and

Sales is credited, whereas in the purchase book Accounts Payable is credited and Purchases is debited. Department sales may be credited separately, of course, for each department.

**Division of Entries.** Now that we have our original journal cut up into several journals, a policy with regard to the disposition of entries becomes necessary, or one may not know where to look to find a particular entry. Since we desire all cash items to be in the cash book so that we can test cash balances easily, our policy with regard to that book is clear. Since, too, the maximum labor saving is accomplished by putting entries in special books, like the cash book, the purchase book, and the sales book, because in them one side of the entry is automatically recorded merely by the fact that the entry is placed in a certain book, it is desirable always to use the special journals rather than the general journal whenever there is no special reason for the other course. Occasionally there is reason for splitting an item between books. Suppose a partner is taken into a business, and he contributes as his investment \$5,000 in cash, a stock of merchandise worth \$15,000, and real estate worth \$25,000. Normally the cash would be entered in the cash book, the merchandise in the purchase book, and the real estate in the journal; and this would serve all purposes but one: it would not give us in one place a complete story of the partner's investment. We can, by using proper care, provide such a complete story in the journal and still have the special parts of the transaction appear in the various special journals, and all without duplicate postings. We saw in connection with our first study of special columns that a blank posting check may be used to indicate that posting is not made from the entry to which it is attached but is elsewhere provided for. We may use that device here to head off double postings: i.e., we may enter the transaction as many times as convenient and head off the posting of duplicate items by inserting the blank posting check at the time any duplicate entry is made. In this case, we wish to produce the effect of the following entry:

Cash	5,000	
Purchases	15,000	
Real Estate	25,000	
To J. Brown		45,000



We can make this entry in full in the journal, with complete explanation. Since, however, we wish cash also on the cash book, and it will be awkward to exclude it from the total debits to Cash at the end of the month, we should see that the \$5,000 is not posted to Cash from the journal entry above — and so we put a blank check in the posting-check column as soon as we make the entry in the cash book. Since, moreover, we intend to post the total credit to J. Brown from the journal, we must not post the credit to Brown also from the cash book, and so we check the item in the posting-check column in that book. We proceed in the same way with the merchandise. We enter it in the purchase book, check the item there so that though it will be posted as a debit (in the total) to Purchases, it will not be posted as a credit to Brown, and then we check it in the journal so that it will not be thence posted to Purchases. The Real Estate is posted, of course, from the journal, for it is nowhere else. To summarize this: we use blank check marks to head off duplicate postings from the inconvenient places, and then the Cash, Dr. is posted from the cash-book total, the Purchases, Dr. from the purchase-book total, the Real Estate, Dr. and the Brown, Cr. from the journal, and no duplicate credit is posted to Brown from either the cash book or the purchase book. The same device can be used when cash sales or purchases are made and it is desired to show the cash on the cash book and the sale or the purchase on the sales book or the purchase book. Blank checking heads off a duplicate posting to Sales or Purchases from the cash book, and a duplicate posting to Cash from either of the other books.

**Division of Transactions.** Sometimes it is desirable to treat what is in essence one transaction as if it were two or more. If a customer makes part payment on a purchase and has the rest charged to his account, it is unfortunate to treat the sale as partly a cash and partly a charge transaction; it should usually be treated as two separate transactions, a charge sale for the full amount of the bill, and a partial cash payment on a debt. The customer's ledger account (kept in a subordinate ledger to be described in the next chapter) must show the amount of the debt. If the sale is treated as only partly a charge sale, only the amount not paid in cash will be carried to his ledger account. In any case

of future reference to this item one would naturally be looking to identify it by the amount of the bill, unless one chanced to remember that part payment was made in cash; but the amount of the bill would not be the amount of the charge. Simply as a matter of convenience, therefore, it is best to let the ledger show the natural unit, or the full bill, as a charge, and the payment as a payment on the charge rather than as a payment on a cash purchase. Similarly if we customarily have purchases charged but occasionally give a note payable at the time of purchase, it is wise to enter the transaction as two — a charge purchase, and the giving of a note in settlement of the charge — rather than as a simple purchase for a note. This assures us that the transaction will get carried through the subordinate ledger for our creditor, be entered under his name, and hence be traceable in future. Indeed, whenever it will be advantageous to have an item indexed under the name of a customer or a creditor, it is well to run it wholly through his account, both debited and credited, even though cash is paid, rather than short-cut it around his account as a cash item.

**Abuse of Labor-Saving.** The modern passion for short-cuts must not be carried so far that the definiteness of the detailed portion of an entry shall be sacrificed. One illustration will suffice. Suppose a man takes, in settlement of an account, his debtor's half-interest in a \$10,000 piece of real estate, therefore worth \$5,000, and takes cash for the balance of the debt, say \$2,500. Suppose now the man buys from some one else the title to the remainder of that piece of real estate for \$5,000, using in part the cash received from his debtor, which pays for one-half of what he buys, or one-fourth of the whole property. He would be very foolish to record that he had received three-fourths of that property from his debtor (though he did receive one-half and cash enough to buy another fourth) and had bought the other one-fourth from the other owner. Such abbreviation would save one entry, but it would falsify the record. If the deeds should be lost before they were recorded, and it were shown that the debtor never owned more than one-half of the property in question, the buyer's books would militate against him in his claim to the whole property. They would indicate that he had bought from the last seller but one-quarter of the property and from his debtor

three-quarters, or more than the debtor owned. Transactions which are for any reason distinct must not be combined in a way that will destroy their identity.

**Loose-Leaf Books.** It is obvious that the use of loose-leaf books, particularly with carbon reproductions and adding-machine slips, may much simplify bookkeeping labor. If, for example, all bills for customers are made on a typewriting machine with an adding attachment, and carbon copies are made, one writing will provide both the bill and the loose-leaf-entry sheet (to say nothing of further copies for the shipping room, etc.), and then an adding-machine slip will give the total sales of the day for the summary record — the debit to Accounts Receivable and the credit to Sales. Then the adding-machine slip may be permanently filed as the supporting document for a journal entry covering the summary of the day's sales; or if sales of many departments are distinguished, a sales book with a single entry a day can show the sales of each day for each department in a special column, and the total of the columns can serve as a summary entry for posting daily, weekly, or monthly, as desired. It is preferable to have such summary entries in bound books, for then the loose-leaf books are tied up with a book so much more permanent that the danger of forgery, or suspicion of forgery, is more remote.

### QUESTIONS AND PROBLEMS

1. Enter the following transactions in a special-column journal, using special columns wherever it seems desirable.<sup>1</sup> Post the entries to the ledger and take a trial balance.

The proprietor invests \$15,000 worth of merchandise and \$5,000 in cash.

Rent is paid, \$200; postage, \$120; stationery, \$50.

Goods are sold to Bay, \$1,000; Gay, \$800; Way, \$2,000; to cash customers, \$1,500.

Wages are paid, \$200.

Cash is received from Bay, \$1,000; Gay, \$800; Way, \$1,000.

The proprietor withdraws \$100 for his personal use.

2. Enter the following transactions in appropriate books, post, and take a trial balance.<sup>1</sup>

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<sup>1</sup> Since but few items are given for the purposes of this problem, all items of expense should be combined into one expense account.



J. Ham, a lawyer and notary public, starts an office to carry on his profession. He invests \$10,000 in cash.

Office equipment is bought for \$2,000, supplies for \$300, and law books for \$6,000 — all for cash.

Notary fees are collected, \$25.

Bills for legal services are sent out as follows: R. Stone, \$250; J. Wood, \$100; K. Sands, \$300; L. Waters, \$500.

Notary fees are collected, \$43.

Rent is paid for one month, \$150; salary to a stenographer is paid for one week, \$20; stamps are bought, \$15.

L. Waters and J. Wood pay their bills in cash. R. Stone gives a note for his bill, payable in 60 days with interest @ 6%.

3. Enter the following transactions in the appropriate books, post to the ledger, find and show on the ledger the profit, transfer the profit to the proprietor's account, and draw up the balance sheet.<sup>1</sup>

The following balances are already on the ledger.

Cash	\$1,200	Proprietor	\$7,000
Equipment	250	Accounts Payable	2,250
Expense	300		
Purchases	4,500		
Accounts Receivable	3,000		
	<u>\$9,250</u>		<u>\$9,250</u>

Merchandise is bought on account from Vesey & Co., \$2,000; \$240 is received for accounts receivable; rent is paid for one month, \$75.

Mdse. is sold for cash, \$500. Postage and stationery are purchased for cash, \$50. Salaries are paid for one week, \$36; cash is paid on accounts payable, Vesey & Co., \$2,000. Mdse. is sold on account to John Green, \$400, and to Ronald & Son, \$600.

Mdse. is bought for cash, \$1,000. Accounts receivable are paid \$1,500.

Ronald & Son give an automobile for their bill. The proprietor takes this for his personal use. Cash is found, \$10.

The inventory of merchandise at the end is \$6,500. Expense inventory is \$275. Wages liability is \$36.

4. From what actual sources should you expect to find posted the items expressed in the tentative entry below? Show how the items posted will look in the sources from which they are posted.

Cash	15,000	
Merchandise	78,000	
Accounts Receivable	31,000	
To Proprietor A		100,000
Accounts Payable		24,000

To enter on the books the assets and liabilities brought into the business by A, who is consolidating his business with this.

<sup>1</sup> See note on page 175.

5. What books of original entry similar to those already discussed should you use for a firm of architects maintaining a staff which engages in the following activities: (1) drafting plans, (2) supervising the construction of buildings planned, (3) writing articles for architectural magazines?

Show in skeleton form the books of original entry with appropriate special columns, and enter in the books the following transactions. Show what is to be posted from each book.

- (a) Bills are sent out, made up as follows: Jones, drafting expense \$200, supervision \$45, other expenses \$10, margin of gross profit \$200, total charge \$455; Smith, drafting expense \$500, supervision \$300, other expenses \$5, margin of gross profit \$400, total charge \$1,205; Brown, drafting expense \$75, margin of gross profit \$50, total charge \$125.
- (b) Cash is received as follows: for professional advice, \$100; on account from Jones, \$455; from the *Architectural Age* for articles, \$100; on account from Brown, \$125; from *The Builder*, for articles, \$200; investment of proprietor, \$1,000.
- (c) Cash is paid as follows: for wages to Roundy for supervising, \$50; for wages to Blunt for supervising, \$30; for wages to White for drafting, \$60; for wages to Whiting for drafting, \$75; for postage, \$25; for personal use of proprietor, \$100.

## CHAPTER XII

### THE PRINCIPLES OF LABOR-SAVING DEVICES IN LEDGERS

**Subordinate Ledgers.** We have so far spoken of Accounts Receivable and Accounts Payable as chiefly sources of information for the balance sheet, and this is quite correct. A little thought, however, will show that something more than information for the balance sheet is needed in connection with the substance which these accounts represent. If a man knows that a certain number of thousand dollars are owed him but he does not know who owes him those dollars, he is in a fair way to lose more of them than he would be if he knew; and if he knows that he himself owes a number of thousand dollars but does not know whom he owes, his credit will unquestionably suffer. Information about debts owing and owed should be systematized. The obvious suggestion is that we make use of the ledger for all such information and open a ledger account with each person who owes us and each person to whom we owe anything. In fact, in small businesses that is what is done; and several or many accounts take the place of the one Accounts Receivable, and several or many others take the place of the one Accounts Payable. In preparing figures for the balance sheet, then, the sum of the balances of the accounts of all debtors is called Accounts Receivable, as if they were all in one account, and the sum of the balances of the accounts of all creditors is called Accounts Payable. This works very well in small businesses. When, however, the number of customers runs into hundreds, or thousands as it does in many large businesses, or even into the hundreds of thousands as it does in a few, the task of finding the amounts owing requires some other method than that just mentioned if information is desired often and promptly. Indeed, getting figures for Accounts Receivable and Accounts Payable at long intervals will not serve in businesses too large to be watched at first hand by the managers. Such managers must have frequent reports of condition, and often accounts receivable and accounts payable are important elements in such reports. Obviously the preparation of such reports would be unduly labo-



rious if the figures could be got only by finding hundreds of balances of individual accounts and then adding them together. The thing to do suggests itself. We can have an account in the ledger for all accounts receivable in a bunch or group, just as if all were receivable from one man (and as we have so far treated them), and then we can keep details of the bunch or group in a subordinate ledger, which shall show how much of the group total is owed by each member of the group. Such a subordinate ledger for accounts receivable is commonly called a "sales ledger," or "customers ledger," and for accounts payable is called a "purchase ledger," or "creditors ledger."

**The Bookkeeping.** This would be laborious if it involved a posting for each entry to both the group account and the individual account, doubling the labor; but we have already seen that this is not required. We have already, by the use of special columns, found a way of carrying to the ledger all items of accounts receivable for a whole period in one posting. It makes no difference whether our period is a day or a week or a month: we can post the total for that period from the total of the special column for that account. If, in addition, we need to know in ledger form what is owed us by each individual of the group, we establish a group ledger, and post each item to the appropriate individual account in that ledger. Then the sum of the balances of all accounts in the group ledger must be identical with the balance of Accounts Receivable in the general ledger, for the two consist of the same thing — one posted in small pieces to the subordinate ledger, and the other posted in gross to the general ledger. Then the general manager can watch gross figures from the frequent reports of Accounts Receivable of the general ledger, and the collection manager can watch details from the subordinate ledger. On page 171 we have an illustration of this principle, except that it is applied to accounts payable rather than to accounts receivable. In the form shown, the total of the column is obviously posted, for the ledger folio is given; but no folio appears opposite the name of Smith or of Jones. If we are to maintain the subordinate-ledger system just described, we must post credits to their accounts in the subordinate ledger and indicate, by using as a posting check the ledger-folio number of their accounts in

that ledger, the fact that posting has been made. No special notation needs to be made of the fact that their ledger-folio numbers are for the subordinate ledger, for the presence of the amounts in the Accounts Payable column sufficiently indicates that fact; but for convenience in posting, the names of Smith and Jones should appear in the journalization column; and the words "Accounts Payable" may be omitted from the detailed entry.

**Controlling Accounts.** Historically we have gone backwards in our treatment of subordinate-ledger accounts. In the days of less developed bookkeeping method, there were no subordinate ledgers. All accounts were kept in the one ledger. Then with the need of prompt and frequent statistical report of debts owed and owing, the plan was evolved of omitting from the ledger details regarding debtors and creditors and substituting an account for the whole group of each, and relegating the details to a supplementary ledger such as has been described. The group account in the general ledger is called a "controlling account," because it "controls" the subordinate ledger in the sense that one who has figures for the controlling account knows what the sum of the others must be — that is, he has the key in his own hands. It is obvious that great care must be taken that no entries are ever made to a subordinate-ledger account without provision for a similar debit or credit to the controlling account, and no entry must ever be made to the controlling account without provision for similar debit or credit to the proper subordinate-ledger account. Indeed, a realization of this is at the basis of the whole plan. If a change is to be made in the controlling account it is because, and only because, a change must be made in a subordinate-ledger account. A transaction can never originate in connection with a controlling account, for the controlling account represents no entity. The entity is in what is represented by the subordinate-ledger account; and that account is subordinate only in the bookkeeping sense — kept in a minor book for convenience, not entered on the balance sheet, but actually representing the real thing for which a group account is substituted in the general ledger and the balance sheet.

**The Subordinate-Ledger Abstract.** As a check on the parallelism between the controlling account and the subordinate ledger



which it controls, occasional comparisons should be made. Such a test consists in listing the balances of all subordinate-ledger accounts, taking the total of those balances, and comparing that total with the balance of the controlling account. If the two figures are not in agreement, error has crept in somewhere and must be found and corrected. This should be done often enough to give assurance that if discrepancy is found it will not be so old, or consisting of so many errors, that detection and correction will cost more than more frequent tests would cost. Errors should be found, for a small discrepancy may be the net result of many large errors which to great extent offset each other in figures but may not correct each other in actual assets and liabilities — on the books, e.g., a debit to one customer may look as good as a debit to another, but one cannot usually collect on wrong debits.

**When Controlling Accounts are Worth While.** It is obvious that so far as pure bookkeeping labor is concerned the use of controlling accounts makes more rather than less work, for besides all the postings to the individual accounts in the subordinate ledgers a few postings have to be made to the controlling accounts. It may seem strange, therefore, to speak of controlling accounts among labor-saving devices. One must realize why accounts are kept: they are kept not for their own sake, but for the information which they can give. They must be used to have value. A list of individual sums due to a business is of little value to the general manager unless he can learn the total, learn how fast collections are made, learn how much he is owing on accounts payable, learn how much cash he has, and see what his financial policy should be. The head of a large active business, not coming into intimate personal contact with all the activities, must rely largely on reports made to him by others — particularly his accountant. He cannot use detailed figures to advantage, and therefore somebody must provide for him total figures; and when the business is large he must watch many figures daily or weekly. Is it easier to combine the detailed figures of accounts receivable into one total by adding together the individual items, or is it easier to keep them always in a controlling account ready for instant use? That is the whole question with regard to the advantage of controlling accounts. A controlling account is worth while as soon as any



group of items is so large, and so important, that the task of combining the details from individual accounts into a total or balance as often as the figure is needed for the guidance of the manager is more laborious than would be the keeping of a controlling account in addition to the individual accounts (which are relegated to a subordinate ledger) — and, as we have seen, the task of keeping a controlling account is not great.

**Extension of the Principle.** This principle is applicable for other things than accounts receivable and accounts payable. If, for example, a manager wishes to watch carefully his expenses, not in detail but in total, and to have minute details of subdivision of expense watched by superintendents, it would be desirable to establish a controlling account for expenses as a whole in the general ledger and carry the detailed expenses to a subordinate expense-ledger. The same sort of thing can be done in a manufacturing business by confining detailed accounts of factory administration to a subordinate ledger called the “factory ledger,” and keeping a controlling account in the general ledger to represent it, commonly called “Factory Ledger.” Individual shipments of merchandise to be sold on commission can be controlled through a controlling Shipments. There is no limit to the extension of the principle except that of convenience — detailed accounts needing frequent observation as a group and sufficient in number to make a group account preferable to the frequent gathering together of details from the individual accounts.

**The Subdivision of Controlling Accounts.** A corollary of the principle of controlling accounts is worth observation. Fancy yourself trying to get your abstract of accounts receivable taken from a hundred thousand sales-ledger balances. If you found a discrepancy, where should you begin to hunt for the error? The error may be in the mere addition of the balances to get the total, or in the figuring of the balances on the subordinate ledger, and the subordinate ledger itself may be right — in other words, the error may be in the test itself. Of course, too, either of the ledgers can have an error, a careless or an omitted posting. In attempting to detect the error, one would naturally first check up the addition of the ledger balances, then the figuring of the balances, and then if the error were not found check up the

postings to both the general and the subordinate ledger. In other words, nothing of the original test can be deemed to be satisfactory until it has been done again or the error has been found; and hence the whole test must be gone over unless the error is found sooner. This is discouraging. If the test can be made piecemeal and each piece be judged by itself, only the pieces that fail to prove correct at the first trial need be done a second time. Now that the principle of the controlling account is available, such piecemeal tests are possible. Suppose instead of one controlling account for the hundred thousand accounts we have ten controlling accounts and ten sales ledgers, for approximately ten thousand accounts each. Suppose we put into Sales Ledger #1 all accounts of customers whose surname initials are A or B, into Sales Ledger #2 all whose initials are C or D, into Sales Ledger #3 all whose initials are E, F, or G, etc. Then the balance of Accounts Receivable Account #1 must agree with the sum of the balances of all accounts in Sales Ledger #1. If it does agree, we have no further concern with that subdivision of our Accounts Receivable, but will hunt for discrepancies in those accounts only for which the agreement is not found. This makes it possible to keep agreement between the subordinate ledgers and the controlling accounts in businesses which are so large that errors would possibly never be found if there were no piecemeal comparison — for new errors might creep into work of such magnitude faster than old errors could be detected.

**Other Labor-Saving Devices.** Numerous devices for saving labor in connection with ledgers have a double labor-saving aspect, for they combine in ingenious ways original entries and postings. These are discussed in the next chapter.

### QUESTIONS AND PROBLEMS

1. The statement below shows balances on ledger accounts.

Cash	\$1,250	Proprietor	\$8,650
Merchandise	8,500	Accounts Payable	3,500
Accounts Receivable	2,300	Kuhn Bros.	\$2,000
Morris	\$1,200	Holmes & Son	1,500
Marsh	830		
Fuller	270		
General Expense	100		
	<u>\$12,150</u>		<u>\$12,150</u>

Enter the following transactions in the journal, cash book, purchase book, and sales book; post to the appropriate ledgers; take a trial balance of the general ledger and abstracts of the sales and purchase ledgers.

We buy on account from Short Co. merchandise costing \$1,200, and from Long Brothers merchandise costing \$530.

Morris pays his bill and buys on account \$1,200 more of merchandise.

We pay Holmes & Son \$1,000 on account.

Sales are made to D. Blanchard for cash \$50, to Stickney & Son on account \$1,200, to Ross Brothers \$1,000 of which \$500 is paid in cash.

Purchases for \$5,000 are made from Montgomery Bros. on account.

Purchases are made for cash at an auction, \$500.

Wages are paid, \$126; supplies are purchased, \$50; postage is purchased, \$25; express is paid, \$7. The proprietor withdraws \$50 for his personal use.

Marsh pays his bill; Fuller pays \$70 on account.

2. The manager of a business has given up all hope of collecting the account of Jay Kay & Co. (in Sales Ledger B), and of Zee & Co. (in Sales Ledger D), and of collecting on the promissory note of A. Bee & Co. He orders the bookkeeper to write off these assets as worthless. (a) What entries should be made in what books? (b) Six months later all these firms pay their obligations in full. What entries should be made? (c) Would the entries be different in any case if the business had been carrying, previous to the writing-off, an account called Allowance for Bad Debts? If so, make the entries and indicate for which of your other entries they would be substituted.
3. Would it be possible to have a controlling account for cash? If so, under what circumstances? If not, why not?

✓ Cash 5-00  
 500  
 Sales 1000



## CHAPTER XIII

### SOME HIGHLY DEVELOPED LABOR-SAVING DEVICES

**Mere Technique.** The matters of this chapter are not matters of principle but of bookkeeping technique, and hence are not of interest to persons concerned only with the larger aspects of accounting. They are, however, important for all who are concerned with efficient gathering of accounting figures, for the fundamental devices described in the preceding two chapters are capable of high development of interest to accountants, treasurers, office managers, auditors, and other officials responsible for the general supervision of books of account. The devices described below are chosen not so much for their own intrinsic importance as because they are typical and suggest how original devices may be developed.

**Lines of Division Between Books.** We have already seen that the cash book, the purchase book, and the sales book are but convenient subdivisions of the journal. It is obvious, then, that the lines of division need be only as hard and fast as convenience requires. If we have taken out of the journal all cash items and put them into a special book, we may equally well take out along with the cash items other items which may be conveniently handled with them. The best illustration of this is cash discounts.

### CASH DISCOUNTS

**The Entry.** As we have already seen in Chapter VIII, it is common in many lines of business to offer a discount, or reduction in the amount of a bill, if the bill is paid promptly — say 3% if the bill is paid in ten days. The customer is charged for the full amount of the bill when the goods are sold, for the seller does not know whether the discount will be taken or not. When he pays, therefore, he must be credited for the full amount of the bill even though he pays less by the amount of the discount. At the time of payment, Cash must be debited for the cash payment, Discount Given must be debited for the amount of the discount, and

the customer (and Accounts Receivable) must be credited for the full amount of the bill. If we were to adhere rigidly to the principle of having only cash in the cash book, we should have to split this entry between two books, a debit to Cash and a credit to the customer in the cash book, and a debit to Discount Given and a credit to the customer in the journal. This means two postings to the customer's account. By putting the discount as well as the cash into the cash book, however, we can credit the customer by one posting. If, on the other hand, we wish the customer's ledger account to show whether he took his discount, as summary information for the credit manager, we must post the items separately to his account; but even then it is worth while to have the discount in the cash book, for one explanation will do for both postings and both may be posted from the same book. Many arrangements of the cash book for this purpose are in use, and as they are typical of the flexibility of bookkeeping form, they are worthy of observation; indeed, they comprise one of the best illustrations that can be given of flexibility, and hence students of bookkeeping may well study them with care and compare them critically.

**With Contra Items.** A commonly used and acceptable principle allows an overstatement of any account provided the overstatement is carried to both sides of the account and provided the actual total is not of value for statistical purposes. There is little value, for example, in the total of the cash account, for it does not represent anything that the manager cares about. It is a result of so many things that it measures no one thing: balances only are what count with respect to it. No harm is done, then, if we exaggerate cash receipts, provided we at the same time (leaving no margin of time for a false conclusion about the cash balance) equally exaggerate the cash disbursements: that is, if we, for convenience in bookkeeping, report more money as coming in than really came in and at the same time report the same excess as going out, no harm is done provided this double (compensating) error has not affected any other account. We have seen that to have the complete record of the payment of bills by customers all in one place, rather than divided between two books, would be a saving of labor in both explanation and posting. If we treat the

### Cash Receipts

			Accts. Receivable		
47	B. Sykes	Invoice, 12/1, Pd.	600	00	
24	Discount Taken	A. Bede, 5%, contra			50 00
17	Accounts Receivable		600	00	600 00
9	Cash, Dr.				650 00

25	Discount Given	B. Sykes, 5%, contra	Accts. Payable		
97	Adam Bede	Invoice, 12 1/2, Pd.			30 00
19	Accounts Payable		1,000 00		1,000 00
9	Cash, Cr.		1,000 00		1,030 00



The net result here is a decrease of cash by \$380, or the difference between \$650 debits and \$1030 credits, though the actual cash received was but \$570 and that disbursed was \$950, again a difference of \$380. This form has still an awkwardness in making entries, however. The cash payment and the discount go on opposite sides of the cash book, and each must be explained fully enough to identify it — the same transaction twice explained. We should like to avoid this duplication. Let us see whether by a new use of the special column we can put both parts of the transaction on the same side of the cash book. We have so far used the special column as a device for holding up temporarily certain items and then posting them in a lump sum. We may use it also, obviously, for other similar purposes, such as transferring items to the other side of a cash book. If, then, we enter the discounts on the same side of the cash book with the payments (even though they represent the amounts not paid), we can transfer them in lump, or total, to the other side of the cash book whenever we wish to post items. In order to observe this, let us take a larger number of items than in our previous illustration, including some of a different nature, start with a cash balance, and close the cash book. It will be noted in the form following that the discount taken by Sykes is entered on the receipts side of the cash book, though it was not received but given, and the total of the column in which it stands is at the end of the period carried to the other side of the cash book, there to increase the Cash credits as much as the inclusion of the discount here in the \$600 has increased the Cash debits. So the exaggeration of Cash debits is offset by an exaggeration of Cash credits.

### Receipts

			Accts. Receivable		
			Total	Dis- count	
Jan. 1	✓	Balance	2,354	27	
13		Bills Receivable			
47		B. Sykes	600	00	2,700 00
64		B. Patterson	400	00	
	✓			50	00
17		Accts. Receivable	1,000	00	1,000 00
24		Discount Taken			77 60
9		Cash, Dr.			3,777 60
			3,777	60	
			6,131	87	
	✓	Balance	1,360	87	

#67 Paid  
 Invoice, 12/1, 5% Pd.  
 Invoice, 12/1, 5%, Pd.  
 Discount contra

Contra

*Disbursements*

			<i>Accts. Payable</i>		<i>Ex- pense</i>	
			<i>Total</i>	<i>Discount</i>		
Jan. 1	97	Adam Bede				
2	91	H. Spring & Bro.	Invoice, 12/2, 5%	1,000 00	50 00	
4	80	J. Judson	Invoice, 10/8	246 00		
	✓	Expense	Invoice, 12/26, 6%	460 00	27 60	
15	✓	Bills Payable	Postage			15 00
21	✓	Expense	#49 Paid			15 00
			Discount contra		77 60	
19		Accts. Payable		1,706 00		1,706 00
25		Discount Given	Contra			50 00
9		Cash, Cr.				4,771 00
✓		Balance				1,360 87
						6,131 87

A new slight awkwardness now appears, for in order to find the cash balance at any time one must allow for the fact that some items are on the wrong side (or, in reality, are not cash items at all). One must either add the total of each discount column to the total of all columns on the other side of the cash book, or subtract it from the total of all other items on the side where it stands. To avoid this, some bookkeepers substitute a "net" for the "total" column of the form as shown. In this is entered the actual cash received, after deduction of discount, and then the total cash for the period is the total of each side of the cash book neglecting the discount columns altogether. This works well for the cash, but it makes some inconvenience for the accounts receivable. We now have no figure ready for posting as a credit either to the customer, for full settlement of his bill, or to the controlling account. As a matter of fact, however, it is well to have the cash part and the discount part of each settlement posted separately on the customers ledger, as a matter for convenient reference, and the credit to Accounts Receivable may be got as the sum of the net-cash column and the discount column. So the totals of these columns may be added together at the foot of the page, the sum extended into the sundries column, and, as before, the discount carried "contra," for it has now been included in the cash items and must be taken out by transfer to the other side.

**Without Contra Items.** Now a new possibility appears. We previously had to treat the discounts as contra items because we

had treated the bills paid as if paid by cash in full. We now have the net cash shown separately, and therefore might as well include in our cash total debit and total credit only the cash actually handled on either side of the book. Then we shall need no contra items, or transfers to the other side of the cash book. Under this method the entries can be made exactly as above, but the closing will differ somewhat. The total of the net-cash column will go directly into the sundries column before the addition of discounts. The discounts will not now be treated as cash items, but will be treated purely as journal entries having no connection with cash, except as involved in transactions in which cash is also involved in a parallel, not a complementary, way. The closing, repeating nothing above the footings of the form above, is then as follows:

*Receipts*

		Net Cash	Accts. Receivable		
			Net Cash	Dis- count	
✓			950 00		950 00
25	Discount Given, Dr.		50 00	50 00	
17	Accounts Receivable, Cr.		1,000 00		
9	Cash, Dr.	3,650 00			3,650 00
		6,004 27			
✓	Balance	1,360 87			

*Disbursements*

		Net Cash	Accts. Payable		Ex- pense		
			Net Cash	Discount			
21	Expense, Dr.						
✓			1,628	40		15	00
24	Discount Taken, Cr.		77	60	77	60	1,628
19	Accounts Payable, Dr.		1,706	00			40
9	Cash, Cr.						4,643
✓	Balance						1,360
							87
							6,004
							27

The double ruling under \$50.00, \$1,000.00, \$77.60, and \$1,706.00, shows that the items go no farther — do not go into the sundries column, for the net cash has already been carried there. Other devices serve similar purposes, but these are sufficiently typical.

As suggested in Chapter VIII, these forms may easily be adapted to show and provide postings for discounts forfeited.



PURCHASE BOOK, PURCHASE LEDGER, AND STOCK BOOK  
COMBINED

**Book of Original Entry as Ledger.** One of the time-consuming tasks of bookkeeping is posting. Under certain circumstances the special column can be applied farther than we have yet applied it and be made to touch the ledger itself. If ledger accounts are not too numerous and transactions are not too varied, the special column in a book of original entry may be itself used as a ledger, thus avoiding the necessity of posting from it. We shall observe such a device in the next paragraph. If, on the other hand, even though ledger accounts are numerous, transactions are few in kind, we may reverse the process and use the ledger itself as a book of original entry, as described in the fourth paragraph following. In both of these cases, however, the ledger concerned is subordinate, for only in extremely rare cases would a business be so simple as to warrant these devices applied to the general ledger.

**Purchase Book and Purchase Ledger.** If the business buys from very few sources of supply, not more than can be conveniently provided with a pair of special columns for each, the purchase book may provide its own purchase ledger. A controlling account may then be provided in the general ledger, not so much to save labor as to give assurance that the liabilities for purchases will not be forgotten in drawing up reports. Obviously not all entries to the purchase-ledger accounts will be found on the purchase book, however, for payments of bills will be on the cash book, and hence some postings will be necessary to these accounts from other books; but the elimination of the credit postings is in itself worth while.

**The Stock Book.** In examining the device just mentioned, let us see how other information may be coupled with it. Suppose the business deals in only a few kinds of commodities, that these are handled in large quantities or numbers, and that it is convenient to keep perpetual information of the amount of each item in stock. By providing special columns for each kind of goods, entering in them all purchases of each, and providing similar columns in the sales book and transferring the sales total of each kind periodically to the purchase book for subtraction from the purchases, we can show the stock on hand.

**Other Facts.** Lastly, information about the date when bills

## PURCHASE JOURNAL AND STOCK BOOK AND PURCHASE LEDGER

[illegible]

are due may be incorporated in the form. The illustration above is worth careful study. It is assumed here that in this business the goods have been bought with the understanding that the shipper is responsible for the freight charges but the buyer pays the freight bill. This means that when the buyer pays the freight bill he is in effect making partial payment on the purchase, and hence he debits the shipper for that payment as if the money had been sent to the shipper. That is why we have in the illustration several small or partial payments charged. Enough space must be left between purchases to provide for the debits. Of course, in the cash book, from which these debit postings come, the controlling account is debited to match these debits.

#### TABULAR LEDGER

**Ledger as Book of Original Entry.** If a business sells only a few kinds of commodities or renders only a few kinds of services but to many customers, it would be a pity to write all the entries in full, all virtually alike, and then make hundreds or thousands of postings. When much variation occurs in entries no short-cut beyond the point to which we have already gone is very helpful, for no summary can be made; but if the transactions are so much alike that tabulation is possible such tabulation may sometimes take the place of entries or actually constitute the entries. Suppose an electric-lighting corporation to serve current for light and for power (at a different rate), and to sell lamps and appliances. Virtually every customer will have a charge every month, and though a customer may have more than one charge in a month for lamps and appliances, those charges may be accumulated and need be entered only at the end of the month, for bills are payable monthly. The bookkeeper needs to do two things: debit the customers, and credit separate accounts for the four kinds of earnings — thus distinguishing for statistical purposes income from lighting current, from power current, from lamps, from appliances. Under normal bookkeeping methods he would credit the income accounts from the original entries as totals of columns, and then debit the customers by posting to each individually. If, however, we can so arrange our customers ledger that the charges to the individual customers for the month for each kind of service can be



added together on the ledger itself, and thus give our total credit to each of the earnings accounts, we do not need any original entries as such, but can post directly to the customers ledger from the inspectors' reports of meter readings and the store's charge slips of lamps and appliances, and then save these reports and slips for reference. This can be done if we run our customers ledger horizontally rather than vertically. In the ordinary type of ledger charges are placed under each other, items originating many months apart coming into juxtaposition. It is not easy (indeed, it is almost impossible without error) to pick out the items of any one month and learn the charges of the period. When, however, the ledger runs horizontally, and charges for any month are in a column for that month, the total of the column for that month is the total charge to all customers for that month from that source. If several columns are provided for each month, the incomes from separate sources may be learned in the same way and from the totals of the columns of the customers ledger may be posted to the credit of the various income accounts. This is shown in the form below. In addition, since balances on customers' accounts cannot now be brought down, they are carried over in a special column. They will complicate entries to the controlling account unless precaution is taken, but this is easily provided as explained in a note to the form.

TABULAR LEDGER

January									February			
	Balance	Light	Power	Lamps	Appliances	Total	Discount	Cash	Balance	Light	Power	Etc.
Smith Brown Jones		15.00	23.00	2.00		40.00	2.30	37.70				
	8.00	5.00				13.00	.50	12.50				
			50.00			50.00			50.00			
	8.00	20.00	73.00	2.00		103.00	2.80	50.20				
		(65)	(67)	(69)		8.00	(52)	2.80				
						95.00		53.00				
						(75)		(75)				

The debit to Accounts Receivable is not the footing of the column for total, for that includes balances brought over; so the total of the balances is subtracted and the net is posted to the controlling account. The credit to Accounts Receivable will be greater than the cash-book receipts by the amount of the discounts: since the discount does not need to appear on the cash book, the credit to Accounts Receivable may be made from this tabular ledger after the discount column and the cash column have been added together. The total of the cash column, however, should be checked for accuracy with the total of the special column in the cash book. The figures below the totals are posting checks for the general ledger. The net effect of these entries is

Accounts Receivable	95.00	Cash	50.20
To Light	20.00	Discount Given	2.80
Power	73.00	To Accounts Receivable	53.00
Lamps	2.00		
Appliances	0.00		

### VOUCHER-PAYABLE SYSTEM

**A Substitute for a Ledger.** Not many years ago it was common for business houses to keep a "running account" with their creditors or customers, with no special care that payments should exactly meet particular bills. Purchases might be scattered through the month, and payment of a lump sum approximately sufficient to cover the items would be made in the following month or later, with the intention of keeping debits and credits virtually parallel but not necessarily tallying item by item. This custom made it necessary to keep a ledger account with each creditor and each debtor, so that the balance, which might not be the exact amount of any bill or group of bills, could be easily noted. In recent years this method has seemed too easy-going. Business men wish to have specific bills paid, and paid on specified due dates. It is obvious that under this plan no ledger account with each creditor is essential, for a file or list of unpaid bills gives the desired information — the balance owed each creditor is always one or more specific unpaid bills. It is therefore nowadays rather common to find such a list of unpaid bills — systematically arranged, of course — substituted for the old accounts-payable ledger. It is not common to find such a list substituted for the accounts-receivable ledger, for such an arrangement is not convenient when the number of items is large — and accounts receivable are usually far more numerous than accounts payable, for sales are usually made in smaller units than purchases.

**The Principle.** The method of substituting a list of accounts payable for the subordinate ledger, when it is coupled with the method of entry described below, is commonly called the "voucher system." The term is flexible, however, and may comprise more or less than what is described here. In essence, the voucher system consists of four parts: (1) substituting an account called "Vouchers Payable" for the old Accounts Payable; (2) substituting a list of consecutively numbered bills for the old subordinate-ledger accounts; (3) providing as an intrinsic part of the arrangement of the list of bills, or form for listing them, adequate means for making postings to the various accounts that are to be debited, and to Vouchers Payable which is to be credited; and (4) making debits to Vouchers Payable from the cash book whenever bills listed are paid. This saves the labor of posting credits to individual accounts, for the original listing of the bill is itself the original entry and posting all in one. The listing of the bills in appropriate columns makes possible, by mere addition, the determination of debits to the various accounts for which the bills were incurred — just as in the tabular ledger shown above we found the credits to the earnings accounts from the total of the columns of charges to customers. This is virtually the reverse of the particular tabular ledger shown above except for one thing: the unit of entry in that tabular ledger is the customer, and all his items appear in one place for one month (for he is a regular customer and therefore has an established place); but the unit of entry under the voucher system is the bill, and bills are entered in chronological order irrespective of who the creditors may be.

**The Voucher Register.** The voucher register is the key of the system. In the form following, the columns at the right are for the debits to be made for the purchases (or liability for services, like telephone service, etc.), but not every account that may need a debit is provided with a column. A group of columns is provided for sundry items which do not have individual columns, and these must of course be posted individually as are items in the sundries column of a cash book. In order to indicate to what accounts these items are to be posted, a column is provided (journalization column), and of course a ledger-folio column is needed



for the posting checks. The amount of all bills is entered in the column provided for the amount (in the middle of the page), and then is repeated or distributed in the columns indicating the accounts to be debited. The total of the column provided for the amount is credited to Vouchers Payable (the liability of the business to make payment). This takes care of the original entries and postings for debts incurred. When debts are recorded as paid on the cash book, Vouchers Payable is debited from that book and notation is needed here (since here is the only record of the specific debt) that the debt has been paid (as would be the case if we had a ledger account for each firm to which we owed the debts). This is given by entering in the columns for payment the date of payment and the number of the check by which payment was made. If the payment is not recorded, the bill is not paid. So a single line here is virtually a subordinate-ledger account, and the sum of the items not marked paid must equal the balance of Vouchers Payable in the general ledger.

**Accessories.** Many business houses like uniform bills for filing purposes, and hence have their own forms which they request their creditors to use in making out bills. They send the printed form for this purpose, and that fact explains the "to whom issued" caption for the second column of the voucher register above. Often payment is made by so-called "voucher checks," which differ from ordinary checks chiefly in having upon them a duplicate or summary of the bill and contain evidence of the payment of the bill, because endorsement of the check is so arranged that it automatically receipts the bill. These, however, are matters not of bookkeeping but of office and financial administration, and are mentioned here only as completing the statement of what is sometimes meant by the "voucher system."

**Comment on the System.** This is a very convenient method of recording small or occasional debts incurred and of getting them posted with the minimum labor to the appropriate purchase or expense accounts. Its obvious inconvenience is that the transactions, past and present, with one firm are not all in one place for reference, but are badly scattered. If, moreover, we wish to know how much we owe any firm, we may have to look back over many pages to see how many bills the firm has against us. If we

# VOUCHER REGISTER

No.	To whom issued	For bill			Paid		Amount	Re- turned	Merchandise		Sundries <sup>1</sup>		
		Dated	Terms	Due	When	Check			Vege- tables	Fruit	Account	Amount	Folio
710	Marcus Marks	Ju. 1	10 ds.	Ju. 11	Ju. 11	1307	14.10	✓	4.60	9.50			
711	Robert Roberts	Ju. 1	30 ds.	Jy. 1			57.18		40.08	17.10			
712	Edward Edwards	Ju. 2	15 ds.	Ju. 17	Ju. 17	1365	25.00				Stationery	25.00	68
713	Peter Peters	My. 30			Ju. 14	1351	84.00	✓			{ Furniture	60.00	18
—	Ibid										{ Fixtures	24.00	21
	Vouchers Payable, Cr.						180.28		44.68	26.60		109.00	
							(30)		(34)	(35)		✓	

<sup>1</sup> Any items of frequent occurrence, whether they are merchandise or not, may be given special columns for posting in total — as Freight, Postage, Traveling Expense.

The numbers below the footings are ledger folios, to show that postings have been made from these sources. The cross footings should equal the total of the first column for amounts. The three items at the right are posted individually, as shown by the folio checks. Voucher #711 has not been paid. Voucher #712 has been paid, but the receipt has not yet come back. On the cash book, Vouchers Payable has been debited for \$123.10 (on these items) and hence the balance of Vouchers Payable in the ledger is \$57.18, the amount of the unpaid voucher.

keep bills paid promptly, however, this will not be laborious. If, too, we keep a card index of all vouchers payable, arranged alphabetically by creditors, the task of finding the record of our relations with any firm is not great. When it comes to this, however, the task of making postings to a subordinate ledger is hardly greater; for debit postings must be made from the cash book in any case, either to the voucher register, as just shown, or to the ledger, and it is virtually as much work to enter credit items in an index as in a ledger. In summary, the voucher system is excellent for small and occasional items for which the record will not probably need indexing; but for purchases or expenses connected with firms for whom complete records of dealings are important, the regular method of ledger accounts is usually more satisfactory. Nothing of the voucher system that is valuable, however, need be given up even if the ledger accounts are maintained; for the voucher register may be used as a medium of posting to ledger accounts of creditors (merely adding a column for accounts payable and placing in that column, rather than in that for vouchers payable, items to be posted to a subordinate ledger, and posting the total to Accounts Payable), and the uniform voucher form and voucher check can likewise be used where desired.

#### PRIVATE LEDGERS

**The Principle.** A labor-saving device is sometimes an apparent contradiction in terms. It may make more labor than it saves, and yet be in a sense labor-saving. If it saves high-cost labor and substitutes even more low-cost labor, it may be worth while. The establishment of the private-ledger system reduces the work otherwise necessary of the confidential bookkeeper — who is often a member of the firm and a person whose time is very valuable. The purpose of the private ledger is to keep in the confidential files, inaccessible to general bookkeepers, certain matters that these bookkeepers do not need to know, such as the investment, the amount of profits, the salaries of partners, what money is borrowed, and what real estate and other property not directly connected with operations is owned. Transactions involving the sort of thing just mentioned are infrequent. It is not much labor for any one to record them. The complication arises from the



fact that many of them are inextricably tied up with transactions which require great labor to record. Profits, for instance, are dependent on purchases and sales; but no busy partner or confidential bookkeeper should take time to enter sales: they must be handled by others. The task, then, is to devise a plan of letting each bookkeeper keep what he must and then of relating the two sets of items without letting the general bookkeepers know what confidential things are related to the non-confidential things. Since, too, the confidential bookkeeper cannot give time to getting trial balances, etc., for the general bookkeepers, the general books must be complete in themselves, must stand squarely on their own feet. This suggests that two sets of books are kept, each complete in itself, but with certain matters common to both sets of books. The best way to see that this is possible is to remember that our Accounts Receivable are in part somebody's else Accounts Payable, for what I am owed somebody owes me, and the item is on both sets of books without confusion of other items on either. That is virtually the relation of private and general ledgers. The inside (confidential) office is treated as if it were a separate business that had dealings with the outside (general) office, and *vice versa*. Let us now examine the method.

**Starting the System.** Supposing the system is begun after the common system is already in operation, the first step is to establish in the new private books the present status of the accounts which hereafter are to be kept exclusively in the private books. Since, too, the private ledger should be the ultimate receptacle of all the facts about the business, so that a bird's-eye view of the business may be taken by the partners from it without consulting the general or outside-office ledger, a summary should be made in the private ledger of the status of all accounts to be kept hereafter in the general ledger. In other words, we will transfer to the private ledger a large number of accounts from the general ledger, and we will enter in the private ledger not only the accounts taken over from the general ledger but a summary of the accounts remaining on the general ledger. Let us illustrate by a concrete case. Following is the balance sheet of a business on the day when the new system is to be inaugurated:

Cash	\$ 5,000	Partner A	\$40,000
Accounts Receivable	20,000	Partner B	50,000
Merchandise Inventory	17,000	Accounts Payable	16,000
Fixtures	8,000	Notes Payable	4,000
Real Estate	60,000		
	<u>\$110,000</u>		<u>\$110,000</u>

It is now intended to have the general bookkeepers take care of all entries relating to purchases, to sales, and to current running expenses, and to have them handle the cash account, but to have them know nothing else about the business except what they already know. Even expenses like interest, taxes, etc., which occur only occasionally and therefore do not make too much labor of entry for the confidential bookkeeper, they are not to know. The first step is to transfer to the private ledger all items on the balance sheet except Cash, Accounts Receivable, and Accounts Payable. To get these items on the private ledger we must on that ledger debit Merchandise, Fixtures, and Real Estate, and must credit the partners and Notes Payable; but as we wish this ledger to be in balance, we must debit or credit something for the difference between the two sides. It is actually \$9,000 [40,000 + 50,000 + 4,000 - (17,000 + 8,000 + 60,000)]. What is the real meaning of this difference? We have taken over to the private ledger more liabilities of the business (including partners' balances) than assets, by \$9,000. Why? Because we have not taken over a part of the assets available for meeting the liabilities taken over. Where are those assets? On the general ledger. Then we will debit the general ledger as responsible for these assets: we will open an account in the private ledger and will call it "General Ledger." So our first entry on the private journal, to be posted to the private ledger, is

Merchandise Inventory	17,000	
Fixtures	8,000	
Real Estate	60,000	
General Ledger	9,000	
To Partner A		40,000
Partner B		50,000
Notes Payable		4,000

It is now to be noted that this \$9,000 is not only the excess of credits taken by the private ledger over the debits taken by it, but

is actually the value of the assets continued on the general ledger over the liabilities so shown; for the assets still on the general ledger are \$25,000 (5,000 + 20,000) and the liabilities are \$16,000. We must now obviously bring our general ledger into accord with the new plan, taking off from it the items transferred to the private ledger, and crediting the private ledger for the excess liabilities (to partners) which it has taken over from the general ledger. The entry follows:

Partner A	40,000	
Partner B	50,000	
Notes Payable	4,000	
To Merchandise Inventory		17,000
Fixtures		8,000
Real Estate		60,000
Private Ledger		9,000

Now let us observe the balance sheet of each ledger.

*Private Ledger*

Merchandise	\$17,000	Partner A	\$40,000
Fixtures	8,000	Partner B	50,000
Real Estate	60,000	Notes Payable	4,000
General Ledger	9,000		
	<u>\$94,000</u>		<u>\$94,000</u>

*General Ledger*

Cash	\$ 5,000	Accounts Payable	\$16,000
Accounts Receivable	20,000	Private Ledger	9,000
	<u>\$25,000</u>		<u>\$25,000</u>

Why does the private ledger have a debit of \$9,000 to the general ledger? Because the latter is responsible to account for a net \$9,000 of property. Why does the general ledger have a credit of \$9,000 to the private ledger? Because the inside office, represented by the private ledger, has left in the care of the outside office \$9,000 of excess of assets (over liabilities) to be accounted for; and the inside office now keeps *ultimate* control of all accounts in its own hands, for it has a controlling account which controls even the controlling accounts kept by the outside office.

**Operating the System.** The most convenient way to operate



the system is to have two cash accounts, and two bank accounts, one to be handled in each office; but for the sake of studying the method under the most adverse circumstances, we will assume here only one cash account and only one bank account. Obviously ordinary transactions of purchase, sale, and expense, will be handled now in the usual way, entered on the general books only. The accounts on the private books are not affected by these transactions and hence get no entries currently. Now suppose \$5,000 is borrowed on notes payable. The general bookkeepers are not to know where the money came from. They are merely told to credit the private ledger, and the cash is deposited in the regular bank account by the confidential bookkeeper. So the general bookkeepers debit Cash and credit Private Ledger, and the confidential bookkeeper debits General Ledger and credits Notes Payable. If, now, the old notes payable are paid, the confidential bookkeeper gets a blank check from the general bookkeeper, tells him the amount to be drawn on the check and instructs him to debit Private Ledger, and then he himself debits Notes Payable and credits General Ledger. At the end of the month the cancelled checks are secured from the bank by the confidential bookkeeper, who removes the checks chargeable on the private ledger, and then gives the rest of them to the general bookkeeper, notifying him also, of course, of any such checks still outstanding. In this way each set of books goes its own way, but joint transactions are entered on both, in reversed entries, and each with such detail only as each needs. Entries which do not concern the general bookkeepers, because not touching accounts that they keep, are entered in the private books only.

**Finding Profit.** In finding profits we have to establish a new relation. The general bookkeepers preferably should not know inventories, for if they do, knowing purchases and sales, they will know gross profits, and knowing also most of the expenses they will know often too much about net profits — and in these days of floating office help it is well not to leave lying around loose information that a floating bookkeeper may carry some day to a competing firm. With inventories on the private ledger only, and purchases, sales, and current expenses on the general ledger only, the task is simply to transfer to the private ledger all in-

formation needed there for finding profit. Suppose during the current period there have been entered on the general ledger purchases of \$168,000, sales of \$219,000, and expenses of \$36,000, and that the inventory of merchandise at the end of the year is \$28,000. On the general books these entries would be made:

Sales	219,000	
To Private Ledger		219,000
Private Ledger	204,000	
To Purchases		168,000
Expenses		36,000

This closes the three nominal accounts named, and, for the net credit of the three of them as previously standing on the general ledger, substitutes a net credit to Private Ledger. On the private books this entry would be made (or two entries, the reverse of the two above, would be used):

Purchases	168,000	
Expenses	36,000	
General Ledger	15,000	
To Sales		219,000

Why in this last entry is the general ledger debited \$15,000? Because during the period of operations the business has acquired assets, as a result of buying and selling, of \$15,000, which are still on the books of the outside office and have never been put on the books of the inside office, but should now appear on those books as a charge to the outside office (for the outside office still holds the property, or has already been credited if it has surrendered any). Similarly in the entry on the general books, the inside office is now taking over the accounts for the profits made (as far as they are covered by the items above), but allows the outside office to retain the accounts for the assets; and so the inside office is credited for the increase of assets which it allows the outside office to keep even though it takes over the earnings accounts. Now profits can be found on the private ledger, for when the new inventory is entered all the elements of profit will be there. Supposing for simplicity that no expenses had been incurred except those on the general ledger, we should then have these closing entries for finding profits (using, for illustration, the simplest method of closing):

Loss and Gain	221,000	
To Merchandise Inv. [old]		17,000
Purchases		168,000
Expenses		36,000
Sales	219,000	
Merchandise Inventory [new]	28,000	
To Loss and Gain		247,000

**The Balance Sheet.** In order to draw up our balance sheet, we must take items from each ledger. Let us suppose, for the sake of simplicity, that all the profits except those that are now in the form of increased inventory are in the form of cash, that our collections and payments on bills have left our accounts receivable and accounts payable just as they were at the beginning of the period, that the \$5,000 which we borrowed on notes over the \$4,000 that we paid on notes is still in the form of cash, and that our fixtures and real estate have not depreciated. Then the trial balances of the two ledgers will be as follows:

*General Ledger*

Cash	\$21,000	
Accounts Receivable	20,000	
Accounts Payable		\$16,000
Private Ledger		25,000
	<u>\$41,000</u>	<u>\$41,000</u>

*Private Ledger*

Merchandise Inventory	\$28,000	
Fixtures	8,000	
Real Estate	60,000	
General Ledger	25,000	
Partner A		\$40,000
Partner B		50,000
Notes Payable		5,000
Loss and Gain		26,000
	<u>\$121,000</u>	<u>\$121,000</u>

Why should the general ledger stand debited for \$25,000 on the private ledger? Because it has accountability for \$21,000 of cash and \$4,000 of excess of accounts receivable over accounts payable. Similarly, the general ledger shows credit to the private ledger for this \$25,000 of net assets which it is allowed to keep. Then the balance sheet of the business as a whole will simply



combine the two trial balances into one after cancelling the private-ledger account on the general-ledger trial balance against the general-ledger account on the private-ledger trial balance, as follows:

Cash	\$21,000	Partner A	\$40,000
Accounts Receivable	20,000	Partner B	50,000
Merchandise Inventory	28,000	Accounts Payable	16,000
Fixtures	8,000	Notes Payable	5,000
Real Estate	60,000	Loss and Gain	26,000
	<u>\$137,000</u>		<u>\$137,000</u>

## QUESTIONS AND PROBLEMS

### DISCOUNTS

1. The Brown Manufacturing Company sells goods on the following terms: spot cash, 10% off; 10 ds., 5%; 30 ds., 2%; 60 ds., net. It collects from Green & Son payment on their bill for \$1,000 that has run 30 days, from White Brothers payment on a bill for \$2,000 shipped to-day, from Black payment on a bill for \$500 that has run one week, and from Lavender payment on a bill for \$1,250 that has run 65 days.

Show by three methods the entries in the cash book for the receipt of cash, and indicate the postings that are to be made from the cash book, not attempting to show discounts forfeited by customers.

How different under each method would the debit side of the cash book look if discounts of \$100 had been taken by the business during the same period?

2. Goods are both bought and sold on the following terms: 8% in 10 days, 4% in 30 days, 60 days net. Enter in the cash book the following transactions subject to these discounts, and show what postings would be made from it, not showing discounts forfeited, when you
  - (a) have a column for discounts to be carried contra, and use totals in the column for the controlling account, and
  - (b) carry no discounts contra, and use net cash in the column for the controlling accounts.

On January 1, Jones pays his invoice of Nov. 2, amounting to \$700; Smith pays his invoice of Dec. 2, amounting to \$2,000; Brown pays his invoice of Dec. 22, amounting to \$500.

We also on that day pay to Blucher a bill of Dec. 3, \$750, and to Oxford a bill of Dec. 23, \$800.

3. Devise a form of cash book for showing, when bills are paid by the firm, what discounts it takes, what discounts it forfeits, and what should be credited to Merchandise for correction of the original over-debit to Merchandise at the time the bills were received — the portion of the bill which was for assumed delay in payment, as discussed on pages 122-123. In this form do not carry discounts "contra"; and use net cash in

the column for the controlling account. Apply to the form which you devise the two entries in the last paragraph of Problem 2 above.

#### TABULAR LEDGER

4. (a) Construct a tabular ledger to show for the individual depositors of a bank their daily balances, daily deposits, and daily checks drawn. Enter in the tabular ledger the following:

At the close of business on Wednesday, May 22, the balance of A. Oakes is \$140, of James Robinson \$1,213, and of Silas Lowell \$219.10.

On Thursday, May 23, checks of the following were presented for payment: Robinson, \$217, \$100, \$763; Lowell, \$57.80. On that day Oakes deposited \$200.

On Friday, May 24, checks were presented for payment as follows: of Oakes, \$115, \$25; of Robinson, \$150, \$225, \$540.82; of Lowell, \$400. Deposits were made by Robinson \$2,016.20; by Lowell \$238.11.

- (b) Show how postings for deposits and checks will get into the general ledger.

#### THE VOUCHER SYSTEM

5. Show on the voucher register and on the cash book all that should show for the following transactions, and show by posting checks what should be posted from each of these books.

Jan. 1. Mdse. is purchased as follows: from S. & Co. \$500, payable in 10 ds.; from R. & R. \$750, payable in 10 ds.; from B. & M. \$1,000, payable in one week. Office supplies are purchased from D. & Son for \$50, payable in 15 ds.

Jan. 8. B. & M. are paid in full.

Jan. 11. R. & R. are paid in full.

Jan. 16. D. & Son are paid in full.

6. How will you record on the Voucher Register the payment of a bill in part?

#### PRIVATE LEDGERS

7. Desiring during the year to change your accounting methods so that the general bookkeeper cannot learn the larger and more confidential facts of the business, you establish a private ledger into which are to be taken all items of the general ledger except Purchases, Sales, Accounts Receivable, Accounts Payable, Expenses, and Cash.

The general-ledger trial balance at the date set for inaugurating the new system is as follows:

Cash—	20,000	Sales—	160,000
Purchases—	150,000	Accts. Payable—	35,000
Accts. Receivable—	75,000	Notes Payable	33,000
Expenses—	19,000	Proprietor	40,000
Equipment	4,000		
	<u>268,000</u>		<u>268,000</u>

- (a) Show the entries on both the general journal and the private journal for making the transfer, and show the skeleton ledgers as they look after the transfer.
- (b) The business for the rest of the year is as follows:  
 Sales (all on charge accounts), \$100,000; purchases (all on charge accounts), \$90,000; collected on accounts receivable, \$110,000; paid on accounts payable, \$120,000; paid on notes payable, \$20,000; withdrawal by proprietor, \$10,000; expenses paid, \$30,000; borrowed on notes payable, \$65,000.
- Supposing only one cash account, handled by the general cashier, show (in journal form) the entries on both sets of books.
- (c) Suppose the inventory of merchandise at the end of the year to be \$40,000. Show the method of finding profits and closing them to the proprietor's account.
- (d) Show the trial balance of each ledger after the books are adjusted for the balance sheet.
8. The trial balance of the general ledger of a business on December 31 is as follows:

Real Estate	35,000	
Merchandise		20,000
Accounts Receivable	60,000	
Accounts Payable		25,000
Notes Payable		15,000
Fixtures, etc.	10,000	
Partner A		60,000
Partner B		40,000
Commission		7,000
Operating Expenses	48,000	
Cash	14,000	
	<u>167,000</u>	<u>167,000</u>

It is now decided to open a private journal and private ledger, and to continue on the old books only items needed for the general office. The inventory of merchandise is found to be \$40,000, the real estate must be depreciated \$3,000, and the partners draw \$5,000 cash each: the balance of profit is to be credited to partners equally. Show the entries for closing the old books so as to show on them and leave on them only the necessary information, and show the entries for the private journal including the finding of profit at the end of the year.

Show the final trial balance of each ledger after adjustment, and show the general balance sheet.



## CHAPTER XIV

### THE TECHNIQUE OF CLOSING THE BOOKS

**The Purpose of Closing the Books.** The process of what is commonly called "closing the books" is two-fold, as has been already suggested: bringing the books up to the time, and providing that the balances on all accounts shall be those properly belonging to the new period which is about to begin, thus "closing" the active standing of the now obsolete figures. It is true, of course, that though these are distinct purposes, the method of accomplishing them is virtually the same, for we have seen that when the books are brought to the time dead or cancelled balances are wiped out and new live balances are brought in. One is done for the sake of the past and the present, the other for the sake of the future; but if the records of the past are correct, they automatically constitute the records with which the future must begin.

**The Varying Task of Closing.** We have seen a large variety of methods of keeping records, not only with respect to the mechanical processes of making original entries and posting, and to the content of various accounts, but with respect to the extent to which the accounts are kept currently up to the time. In Chapter VIII we saw accounts that enabled us to show virtually every aspect of every element of a business at any moment, as with Interest Accrued, Interest Prepaid, Interest Earned, Interest Accrued Liability, Interest Unearned, and Interest Charges. Yet we saw that normally these accounts are not kept currently. Indeed in many counting houses only one account is kept for interest. As typical of a short-cut method of bookkeeping, the opposite extreme of the six accounts just mentioned, it will now pay to examine the handling of interest in a single account.

**A Single Account for Interest.** It is obvious that if a single account for interest is to take the place of the six accounts already discussed, four of which were real and two nominal, it will be a mixed account, needing adjustment at the end of the period, for some of what it represents will have been converted and some will remain unchanged. It is next clear that the debits and credits of

this single account must be identical with the debits and credits of each of the six accounts for which it is a substitute, or else consolidating six into one would hide information. In substance, then, our rule for the single account becomes this: whenever any of the six accounts previously mentioned would be debited, debit the single account, Interest; when any of them would be credited, credit Interest; except, of course, that it is ridiculous both to debit and to credit Interest, and hence when any entry involves two of our six interest accounts we omit all entry — unless other accounts also are concerned and more is involved on one side of the six than on the other, in which case the net excess only is entered to Interest. The net effect of all this is that a debit to Interest may mean any one of six things — an asset in the form of interest accrued, an asset in the form of interest prepaid, the correction of an earning overstated, a payment of interest accrued liability, the expiration of the term of a loan for which interest has been collected in advance, and a charge (cost, or expense) for the use of money; and a credit to interest may mean any one of six things — payment to us of interest accrued, the expiration of the time for which we have prepaid interest, the earning of interest by us, incurring liability for interest to be paid by us, receiving interest in advance of the period for which we have rendered the service of loan, and a correction of interest charges (cost, or expense). Although here is much consolidation of unlike things, the account comes out exactly right in the end if at the time of adjustment all items of accrual and prepayment (both in favor of the business and against it) are taken into consideration by any one of the methods about to be described. This is illustrated by the four transactions that we used to summarize the treatment of interest under the six-account method shown on page 129. For convenience, the table of transactions is repeated here.

<i>Date of transaction</i>	<i>Kind of transaction</i>	<i>What given</i>	<i>Amount given</i>	<i>What got</i>	<i>Amount got</i>	<i>Note bearing interest</i>
Dec. 1	borrowing	Note Payable	\$1000 00	Cash	\$ 975 00	No
11	lending	Cash	597 50	Note Rec.	600 00	No
16	lending	Cash	1200 00	Note Rec.	1200 00	Yes
19	borrowing	Note Payable	2000 00	Cash	2000 00	Yes

Under the single account for interest the following entries would be made on the day of the original transaction as indicated.

Dec. 1	Cash	975.00	
	Interest [prepaid]	25.00	
	To Notes Payable		1000.00
Dec. 11	Notes Receivable	600.00	
	To Cash		597.50
	Interest [unearned]		2.50
Dec. 16	Notes Receivable	1200.00	
	To Cash		1200.00
Dec. 19	Cash	2000.00	
	To Notes Payable		2000.00

The debit to Interest on December 1 represents an asset: we have bought and paid for the right to use the loan for a certain time. The credit to Interest on December 11 represents a liability: we have taken the interest payment for a service that we have not yet rendered, and we are liable for either the service or the return of a portion of the payment in case the note is paid before it is due. On December 31 the situation has changed with respect to all four notes. On the first of them, the asset has shrunk by 30 days' expiration (or \$5.00) to \$20.00, so that if we were to make an entry it would be Interest [charges], Dr., Interest [prepaid], Cr.; on the second, our liability has shrunk by 20 days' service rendered (or \$2.00) to \$.50, so that if we were to make an entry it would be Interest [unearned], Dr., Interest [earned], Cr.; on the third, 15 days' accrual of asset in our favor has occurred, \$3.00, so that the entry would be Interest [accrued], Dr., Interest [earned], Cr.; and on the fourth a new liability has been incurred for interest to be paid, 12 days, \$4.00, so that the entry would be Interest [charges], Dr., Interest [accrued liability], Cr. We do not make these entries, of course, for they would produce no effect on the single account for interest. Under the single-account method we adjust for the facts of asset and liability, and then earnings and charges automatically appear. Though Interest is on our books with a net debit balance of \$22.50 (\$25.00 debit less \$2.50 credit), what it really to-day represents in the way of real things is assets of \$18.50 (assets of \$20.00 and \$3.00, less liabilities of \$.50



and \$4.00); in other words, a conversion has taken place, so that what is on the books at \$22.50 is a net asset of only \$18.50, and \$4.00 of the \$22.50 must be transferred from this interest account to Converted Assets, or other clearing account, and only \$18.50 will be carried down to the balance sheet and the new year. This, it will be observed, is just what we obtained under the six-account method discussed in Chapter VIII (page 130). That method gives full information as currently as we wish to keep it. This method gives us virtually no information except at such times as we are willing to go through our notes and drafts and see what assets or liabilities on account of interest they involve, and even then the information for the balance sheet is of most summary character, whereas the other method gives details.

**What is to be Closed.** With such variations of method — not to be regretted, because flexibility is the soul as distinguished from the body of bookkeeping — it is clear that no rule of thumb for closing the books can be followed. So far as an account is already written up to the time — that is, adjusted to the time of the balance sheet — nothing remains to do but carry down to the new year or close to appropriate clearing accounts the balance shown on the account. The title of an account, however, will not indicate at all whether it is adjusted to the time of the balance sheet (unless, indeed, as occasionally, the title itself includes a date, as, Inventory of Merchandise, January 1, 1922). The title may suggest current adjustment, as Commission Accrued, Insurance Prepaid; but if the last entries are old, the account needs adjustment — for even accounts with titles that suggest current freshness cannot be kept absolutely fresh without constant and unnecessary petty adjustment to changes of no daily significance though of large significance over longer periods. Every account needs examination to determine whether it needs adjustment. The more nearly it has been kept fresh currently, the less adjustment it will need.

**The Effect to be Produced.** The effect to be produced depends upon the degree to which it is desired that the balance sheet shall show details. This may again be illustrated by reverting to our six-account and one-account method of handling interest. Under the six-account method we have on our balance sheet two assets,

Interest Accrued, and Interest Prepaid, and two liabilities, Interest Accrued Liability, and Interest Unearned. Under the one-account method we have one item only, Interest. Do we wish our balance sheet to show four separate items for interest, or one? The discussion following will indicate the principles applicable to closing, but will not attempt to carry each method to all its applications; it will be easy to see, however, how any account described in Chapter VIII can be provided for by bookkeeping methods if only the necessary information has been preserved.

**Fundamental Methods.** Three fundamental methods of closing, and variations or combinations of them, are in use. Choice between them is less a matter of principle than of taste or adaptation to circumstances. The first was illustrated in Chapter VII, in which we by journal entries took out of certain accounts the values still shown in the accounts but actually not in the business recognizable under the titles of the accounts, because already converted into something else, and left in the original accounts only the value still in the business recognizable under the names of the accounts. The second may be said to be virtually the reverse of this, for under it we by journal entries transfer to new accounts any inventories which remain in the old accounts, so as to leave the old accounts (which originally represented assets) purely nominal and therefore finally representing values which are no longer recognizable under the names of the accounts. The distinction between these two methods lies in the simple fact that the first takes out of operating accounts all that is nominal only, and leaves all that is real, and the second takes out all that is real, and leaves what is nominal. In the first case what is taken out is carried to Loss and Gain, and in the second what is left is carried to Loss and Gain. The third method accomplishes virtually the same result as the first, but works directly on the ledger without journal entries, by a device yet to be explained. Any combination of these methods may be used also.

**Making Operating Accounts Real.** This is well illustrated by the entries for Fuel, as shown for both the cost-accounting method and the inventory method, on pages 57 and 72. Fuel was originally debited for \$350, but at the end of the period two new facts necessarily take the place of the old fact: the fuel consumed is

\$100, and must show on the operating statement, while the balance of fuel which the new year inherits is \$250, and this must show on the balance sheet. So we transfer \$100 from Fuel to Goods-in-Process, or Converted Assets, or Loss and Gain, and leave \$250 on Fuel, and bring down this balance to the new year. Since we are now concerned with the technique, rather than with the substance as we were when the cases came up before, we may well here observe the forms. Let us first observe the ledger account for Fuel before the books were closed.

FUEL			
Cash	350	00	

The closing entry follows.

Goods-in-Process	100.00
(or Converted Assets)	
(or Loss and Gain)	
To Fuel	100.00

When this entry has been posted, supposing it was made from journal page 47, and Fuel has been balanced, we get the following:

FUEL			
Cash	350	00	Dec. 31
			Goods-in-Process
			Balance
			47
			100
			00
			250
			00
			350
			00
Balance	✓	250	00
GOODS-IN-PROCESS			
Dec. 31	Fuel	47	100
			00

Now our ledger shows just what it should: Fuel shows statistically how much value of this sort we have handled during the period, and how much we have still unconsumed and available for the coming period; and Goods-in-Process shows the destination of what has been converted. Exactly the same handling is correct for the Prepaid Insurance. A different result follows when the asset converted has not been put upon the books but the books are now to be brought up to the time. Suppose workmen are paid by the piece, but wages cannot be paid up to the moment because of the delay incident to calculating the wages due. Sup-



pose, too, that we have debited Wages for all sums paid in wages during the period, \$18,000, but have not yet debited Goods-in-Process. In closing our books, then, we must debit Goods-in-Process not only for all wages paid and already debited to Wages, but also for all wages earned though not paid, say \$500. The entry for this is

Goods-in-Process	18,500	
To Wages		18,500

We now have a credit balance of \$500 on Wages. This constitutes a liability, the excess of assets secured over the payment made for those assets, and hence an ownership-claim of our employees for wages. We have thus made our Wages real just as we made Fuel real, by transferring to Goods-in-Process, Converted Assets, or Loss and Gain, that which was nominal and leaving as a balance that which represented assets and liabilities. In the case of Fuel our final balance represented an asset, and here it represents a liability. This is not all, however. We are concerned also with the effect on Wages for the next period. The account for the new period begins, as we have just seen, with a credit balance, and it is a real account. Suppose in the subsequent period we continue to use this same account for wages of the period, as a nominal account, debiting it for payments made and crediting it for earnings of employees. The wages paid first in the new period will be those due from the previous period. When they have been entered as paid, the account will have no balance, of course; and this is as it should be. This debit made in the new period is not for work done in the new period, and hence should be offset by a credit — giving the account immunity for that which is thrust upon it for the accommodation of the old period. The new period confers a benefit on the old, and should be given credit for it. Since, moreover, it is known beforehand that the new period will have to pay for the old, that credit is actually given in advance when the books are closed, and automatically the records are adjusted.

**Making Operating Accounts Nominal.** The cases of Fuel and Wages used above may well be used also to illustrate closing by making operating accounts nominal. Here, instead of leaving the real elements in the account to be closed (as a balance ready for

the new period) and carrying the nominal portion to Goods-in-Process, Converted Assets, or Loss and Gain, we shall carry the real portion in each case to a new account, leaving the nominal portion temporarily in the old account, and then transfer the balance of the old account (now nominal) to Goods-in-Process, Converted Assets, or Loss and Gain. Without further explanation the entries follow.

Fuel Inventory	250	
To Fuel		250
Goods-in-Process	100	
To Fuel		100
Wages	500	
To Wages Liability		500
Goods-in-Process	18,500	
To Wages		18,500

The ledger follows.

FUEL							
	Cash		350	Dec. 31	Fuel Inventory	47	250
					Goods-in-Process	47	100
			350				350
FUEL INVENTORY							
Dec. 31	Fuel	47	250				
WAGES							
	Cash		18,000	Dec. 31	Goods-in-Process	47	18,500
	Wages Liability	47	500				
			18,500				18,500
WAGES LIABILITY							
					Wages	47	500
GOODS-IN-PROCESS							
Dec. 31	Fuel	47	100				
	Wages	47	18,500				

The essential difference between the two methods lies in the place and title of the real accounts after the books are closed. Shall the inventories and liabilities stand, at the time the balance sheet is taken, in accounts that never contain anything else and that carry

distinct titles, or shall they be in accounts to which other things are carried and which therefore bear less specific titles? Under the first method, the first item for any period is the amount brought from the preceding period (provided any such balance remained); and hence confusion is not likely to arise. Under the second method, confusion cannot arise with proper precautions, but extra labor is involved; for sooner or later the balance carried over to the new period in a separate account must be consolidated with the new items of that period, and this means transferring the inventory or liability to the operating account of the new period by a process just the reverse of that by which it was taken out of the operating account of the old period. Instead of coming down simply as a balance to the new period, it is taken out of the old, put into a special account, and then put into the account for the new period.

**Direct Ledger Closing.** Under this method adjustment items are put into the ledger without journal entry: they do not constitute record of transactions, but merely record the fact that in the adjustment between earning periods certain items already paid do not belong to the period in which they were paid but to a later period, and that certain items belong to the present period though they will actually get into transactions only in a later period. In our fuel illustrations just used, though \$350 has been spent for fuel, only \$100 need be considered in closing the accounts for this current period, and \$250 must be considered in a later period. By this method, it may be said that the process of closing the books is not only an accounting but a mechanical method of drawing a line of cleavage between two earning periods. By this method we directly carry each to its own place without ado; but in order to show that all fuel is now accounted for, we must show how its account is balanced. So we enter (in red, preferably) on the credit side the amounts transferred to the debits of the appropriate accounts concerned. That is, we enter our balances as we did on page 214, except that here we have two balances, separate parts, with different destinations because of the split between periods. Since, however, the account for fuel of 1920 is dead on Dec. 31, 1920, we do not need to carry our balance of \$250 to an account with "1921" in it, but bring it down simply as a



balance on Fuel, for all fuel after Dec. 31, 1920, must be 1921 or later. Following is the illustration.

FUEL				[page 12]	
Cash		350	Dec. 31	Inventory	√    250
				Goods-in-Process	L28    100
		350			350
Balance	√	250			
GOODS-IN-PROCESS				[page 28]	
Dec. 31	Fuel	L12    100			

Strictly speaking, the \$350 debited to Fuel is split into two parts, one part is carried down to the new Fuel, and the other to Goods-in-Process, and the credit items are to show just how the account is balanced. The reason for not making a journal entry is simply that no transaction is involved, and that we are merely splitting the \$350, already recorded, between two periods. Our wages item is in a sense a reverse case. Here we have to carry to Goods-in-Process, or Converted Assets, or Loss and Gain, not only all that has been debited but more. We are splitting not the asset that we got for our costs, but the payment that is made for them — \$18,000 paid this year and \$500 to be paid next year. Our whole \$18,500 must be carried to the summary operating account (Goods-in-Process, or Converted Assets, or Loss and Gain), of course, but this will not balance our account, and should not. A part of next year's payments are chargeable to this year's business. We might make a journal entry, debiting Wages 1920 for what has yet to be paid for 1920, and crediting Wages 1921 — on the ground that the work done in 1920 is an asset and as 1921 will pay the bills it should be credited. When the pay roll is met in 1921, Wages will in the natural course of events be debited, though part of that payment is for work done in 1920: hence Wages of 1921 should now be credited for taking over a burden of 1920 — for paying bills that confer a benefit on the business of 1920. We can do all this without journal entries, however, and we are justified in it since the record is not for new transactions but for a mere split between periods. We therefore close our old Wages by entering (preferably in red) \$500 on the debit side, for the wages accrued not yet paid, really a balance that we are to

carry to the new Wages (for 1921), and \$18,500 on the credit side (also preferably in red), a balance that we are to carry to Goods-in-Process, or Converted Assets, or Loss and Gain. When this has been done and the amounts designated have been so transferred, we get the ledger (for these items) as follows:

WAGES						[page 14]	
Dec. 31	Cash	√	18,000	Dec. 31	Goods-in-Process	L28	18,500
	Liability		500				
			18,500				18,500
				Balance		✓	500
GOODS-IN-PROCESS						[page 28]	
Dec. 31	Wages	L14	18,500				

When items are transferred in this way, the index figure is the ledger page from which and to which transferred, of course, instead of the journal page from which posted. The balance on Wages, being now real, represents sums due for wages, exactly as if the names of the individuals to whom money was owed for wages appeared in ledger accounts with credit balances — ownership-claims.

**Comparison of Methods.** It is now worth while to examine the ledger under each of the three methods and note differences. For this purpose the accounts for fuel are repeated below:

[METHOD I]		FUEL			
Cash		350	Dec. 31	Goods-in-Process	47
				Balance	✓
		350			250
Balance	✓	250			350

[METHOD II]		FUEL				
Cash		350	Dec. 31	Fuel Inventory	47	250
				Goods-in-Process	47	100
		<u>350</u>				<u>350</u>

FUEL INVENTORY			
Fuel	47	250	

[METHOD III]		FUEL			
Cash		350	Dec. 31	Inventory	✓ 250
				Goods-in-Process	L28 100
		350			350
Balance	✓	250			

From this case it is obvious that the difference in appearance on the ledger is negligible. The index references differ, of course; the term used in the explanation column for inventory differs slightly; the color of ink (if one uses red) differs from form to form; in one case, the inventory is in a separate account substituted for the regular account. Here the differences end. In other words, they are negligible except for matters of taste. One combination of methods suggests itself: carrying the inventory to an inventory account by journal entry, and then carrying the balance of the account (the nominal portion) to Goods-in-Process (or its substitute) by direct ledger transfer. This would not give a new result, however, but only a different combination of items in the results shown above. It will be noted that Goods-in-Process is identical in the three cases except for the index reference, journal page 47 in two cases and ledger page 12 in one; and hence it is not repeated here. With respect to the illustration with Wages, we again get virtually the same result under the three methods — the same differences as with Fuel.

**Comment on Methods I and II.** Theoretically the choice between the first and the second method (making the account real, and making it nominal) is negligible. Practically, each has its advantages and its disadvantages. When the first is used, the inventory or liability at the beginning of any period is at once carried into the account for the new period, is consolidated with the new items for the period, and can be used statistically later only when identified. Under the second method, it is in an account by itself, and is therefore always available for statistical use, even if it is immediately transferred to the operating account for the new period (for accounts transferred preserve their original figures, of course, but have them offset by entries on the other side). The transfer to the operating account for the new period may be postponed even to the end of the new period; and this is often done when the new items of the new period are desired statistically separate from the items inherited from the old period. One disadvantage from this separation, besides the additional bother of closing the inventory account out to the new operating account as already mentioned, is the fact that if the inventory is not at once closed out to the new operating account (in



which case there is virtually no advantage in having it in a separate account at all), it remains on the books as an inventory long after it ceases to have any validity as an inventory and is likely to mislead. The protection against this is to give the title a date, as *Merchandise Inventory, Jan. 1, 1923*. In the case of liabilities, moreover, unless they are at once closed to the new account, a new inconvenience arises from the fact that if a separate account is set up, as for wages liability just illustrated, care must be taken to observe, when wages are paid, just what amounts are paid on old items, and to debit *Wages Liability* and not *Wages* for them — else *Wages* will be twice debited for the same thing, once when the liability was entered and again when it was paid. If, on the other hand, the first or the third method is used, this inconvenience will not arise, for the liability is shown directly on the new operating account as a credit, reducing by so much the net effect of the debits for items paid in the subsequent year (because this amount though to be paid in that year is a charge against the preceding year and immunity is given in advance). Where estimated figures rather than known figures are used for adjustment, however, the second method, carrying the liability to a new account and keeping it until paid, is the only accurate method. This is well illustrated by the case of allowance for discounts, as discussed below.

**Closing Accounts with Allowances.** As pointed out in Chapter VIII, the provision of an allowance for discounts available to customers at the end of a period, on sales of the period, necessitates care that the discounts be not again debited as deductions from actual selling price when the bills are paid. So when the discounts are actually given the debit is to *Allowance for Discount Offered* and not to *Discount Given*. This, however, means observation at each settlement of bills to distinguish between those of the previous period and those of the new. Let us suppose, on the other hand, that at the beginning of the new period the allowance for discounts offered credited at the end of the old is at once transferred to *Discount Given*, thus giving this account of the new period immunity in advance for the discount belonging to the old period; let us suppose further that all discounts given in the new period, whether on old or new sales, are debited

to Discount Given; clearly if all the old discounts offered are taken by customers the debit balance on Discount Given will show the new discounts given; but if any of the old discounts offered are forfeited the immunity given in advance will be excessive and will destroy by so much the significance of the debit balance on Discount Given. Then we shall not know either how much discount was actually taken on sales of the new year or how much of the discount offered on sales of the old year was forfeited to us as an extra gain. This method will not give us satisfactory statistical information, therefore. The same sort of thing is true, of course, for Allowance for Discount Available. When, therefore, the amount of an allowance is a mere estimate of something belonging to the old year but not ascertainable accurately until the new, the method of bringing down the old allowance immediately to the account for the new year and making thereafter no distinction between old items and new not only makes impossible a test of the accuracy of the old allowance and so destroys its value as a guide for the future, but prevents accurate statistics for the new year. This has already been fully illustrated in connection with Allowance for Bad Debts, on pages 124-126.

**Comment on Method III.** The general comment often made upon Method III is that it is irregular and unconventional because ledger items are entered without previous record in books of original entry. This is final, since, as has already been suggested, the adjustment entries of the kind just discussed are not for transactions but for division of costs between periods. The second objection is that record on the ledger of such items without record of where they come from is likely to lead to inaccuracy in the first place and improbability that error will be discovered. The answer to this is that any desirable memoranda supporting such ledger items may be entered in the journal as memoranda (not extended into money columns), without the formality of posting. The third objection is that the adjustments are not summarized in any one place for reference (as they are when journal entries are made, naturally following one another in immediate succession), but are scattered through all the accounts concerned, each having its own adjustment and that adjustment



going nowhere else except usually to Loss and Gain (or its substitutes). Under the journal methods of closing, the detailed items of Loss and Gain would be in the journal and usually only the total of each side would be in the ledger; but under the direct ledger method of closing the details of Loss and Gain would be on the ledger account, because they would be transferred one by one from different sources to that account. The task of closing is simpler by the direct ledger method, of course, for less writing is required, and comparatively few adjustments need explanation; and when the items to be adjusted are not numerous, so that they can be readily found for reference on the ledger itself, this is an excellent method. When, on the other hand, many items need explanation and many items need adjustment, and therefore a summary view would be hard to get from the ledger alone because they would be scattered, one of the journal methods of closing is preferable.

**Forms Preliminary to Closing the Ledger.** Often many items need adjustment before the closing is complete, and every adjustment has two effects — as everything in double entry has a double aspect. It is difficult to carry many items through without neglecting or duplicating something. Particularly is this so when a succession of adjustments hinge on one another — as closing Freight to Fuel, Fuel to Power, Power to Goods-in-Process, etc. If the adjustment of Freight is wrong, all subsequent items in this series are wrong. It is not usually safe, therefore, to go on with the closing process until the whole procedure has been planned ahead and tested by balance-sheet and income-sheet figures worked out from the outlined plan and found consistent.

**Form of Six-Column Statement.** The simplest of forms for assistance in closing the books has six columns, two for the trial balance as it stands before adjustments, two for the balance-sheet figures (after adjustment, of course), and two for the operating-statement figures (after adjustment). The items of the trial balance which represent assets or liabilities just as they stand, i.e., pure real accounts, are extended in the asset and liability columns without change. The items which are purely nominal and are complete to the time of the trial balance are extended into the operating-statement columns without change. The mixed items, those which are behind or ahead of the time, are



not extended into other columns, but the amounts to be extended from them are derived from the trial-balance figures by such adjustment as may be necessary. Below is a six-column statement for a simple mercantile business having only a single account for merchandise.

*Six-Column Statement*

	Dr.	Cr.	Re- sources	Liabil- ities	Losses	Gains
1 Proprietor		30,000		30,000		
2 Cash	15,000		15,000			
3 Accounts Receivable	18,000		18,000			
4 Merchandise	1,600		29,000			18,400
5 Accounts Payable		13,000		13,000		
6 Notes Payable		8,000		8,000		
7 Rent	3,000				3,000	
8 Taxes	500		50		450	
9 Wages	13,000			600	13,600	
10 Interest		100		25		75
	51,100	51,100	53,050	51,625	17,050	18,475

*Proof*

Total Resources	53,050	Total Gains	18,475
Total Liabilities	51,625	Total Losses	17,050
Net Gain	<u>1,425</u>	Net Gain	<u>1,425</u>

The figures for the first three accounts, and for the fifth and the sixth, are obvious, for the accounts are real, need no adjustments, and accordingly give exact items for the resource and the liability column. The seventh similarly gives a figure for the loss column (converted-assets debit).

**Merchandise.** The debit balance of Merchandise shows that the total charged to Merchandise is more than has been got back; but we do not know how much merchandise still remains unsold. If the amount unsold is worth at cost price \$1,600, the handling of merchandise has resulted in neither gross profit nor loss; for what we have left just equals what all our merchandise cost us less what we have got back. If, on the other hand, what we now have on hand is worth at cost price more than \$1,600, it is obvious that we have made some gross profit; for if we had no merchandise left our loss would be only \$1,600. To put this in another way, the unrecovered cost of what we have on hand is \$1,600, or the net

debit to the account. If the goods on hand actually cost more than \$1,600, the difference is gross profit realized from selling some of our goods for more than they cost, thus reducing the net balance of the account to less than the cost of the remainder. The profit does not lie in having on hand worth \$20,000 (as shown by the resource column) merchandise that cost only \$1,600, but in having sold (the amount being here unknown) some of the merchandise at a price so far above cost that the balance remaining now stands net far below cost. If we could know, for example, that the \$1,600 debit balance came from \$86,600 debits and \$85,000 credits, and that we have still on hand \$20,000 at cost price, we could at once see that what cost us \$66,600 (\$86,600 - \$20,000) was sold for \$85,000, and that therefore our gross profit is \$18,400. Without actual figures of purchases and sales, i.e., using the short-cut, we merely say that the net cost of what we have is \$1,600, and as it is worth (at cost price) \$20,000, our profit from what we sold was \$18,400. This is a convenient way of figuring it; but logically it is wrong, for we make profit not on what we keep but on what we sell. For purposes of finding profit on a six-column statement, however, it is satisfactory. We accordingly on our form show the inventory at the end of the period in the resource column, and extend the resulting gross profit into the gain column. As a convenience for the eye, all items of resource or liability resulting from adjustment, and therefore not agreeing with trial-balance figures, may well be in red — to show that they were not altered inadvertently.

**Taxes.** Taxes needs adjustment. Though \$500 has been paid during this period, \$50 of the amount has not yet been consumed, or can be realized upon later (perhaps a rebate is allowable), or was paid in advance of the period for which levied. So not all of this is chargeable to the period. The asset portion is carried in the resource column, and the consumed portion in the loss column.

**Wages.** The debits have not covered all the costs of the period, for we find a liability of \$600. This is extended in the liability column. Then this liability is added to the debits shown by the trial balance, and the sum is the charge for the period, extended as loss.

**Interest.** Earnings from interest are shown by the books to be \$100; but we also find a liability for \$25. This may be either a lia-



bility to pay interest of \$25, reducing the net earning to \$75, or it may be recognition of the fact that interest has been paid to the business in advance and that \$25 of this has not yet been earned, for the business is responsible to allow further use of its money without further compensation — and hence a part of this \$100 will be an earning of a later period after the obligation to allow the loaned money to be used is fulfilled. In either case, only \$75 has been earned in the period, and \$25 is the amount for which the business is liable — to pay, to repay, or to allow in the use of its funds — and hence constitutes some ownership-claim. The items are extended accordingly.

**The Proof.** If we have started with a correct trial balance and have entered properly all adjustments and final dispositions of items, our six-column statement must be in balance, for we have kept the double aspect of double entry throughout. In every case we have either used a trial-balance figure as it was, or have made in it an adjustment which got into both the resource-liability and the loss-gain set of columns. When, for example, we raised the merchandise figure from \$1,600 to \$20,000, we changed the loss-gain figure from \$1,600 loss to \$18,400 gain; when we reduced the tax loss from \$500 to \$450, we also increased the resource by \$50; when we showed \$600 liability for wages, we increased our loss by \$600; when we showed a liability of \$25 for interest, we reduced our gain by \$25. So always we kept our changes in double entry. In the end, then, the net assets must equal the proprietor's ownership-claim. We started with the proprietor's ownership-claim before adjustment was made, and have carried all changes of his ownership-claim in the form of profit or loss into the loss or the gain column. It must follow that the excess of total assets over total liabilities (including the proprietor's ledger balance of ownership-claim, before adjustment, as a liability) is the increase of net assets for the period. Since the loss and gain items show the operating figures, as subdivisions of the proprietor's profit-claim, it also follows that the excess of total gains over total losses is the increase in proprietor's ownership-claim for the period. These two things, moreover, are the two aspects of the same thing — the growth of assets and the growth of ownership of assets. So they must be equal. The six-



column statement may well show that test, as above. When the figures are proved in this way, one is ready to go on and close the ledger, incorporating the adjustments and the closing items upon it, by one of the methods described above, with assurance that things will go smoothly and produce right results if due care is taken.

**Another Illustration.** Let us take next another illustration more complicated. We will use again the figures of the problem used for illustration of the inventory method of getting an operating statement, in Chapter VII, starting before any adjustment and closing entries were made. The trial balance of these figures would give in the trial-balance columns those that follow below. It will be remembered that the following facts were not shown on the books before their adjustment: inventories — raw material, \$3,500; fuel, \$250; insurance prepaid, \$225; goods-in-process, \$2,205; finished goods, \$600: liability — royalties, \$280.

Six-Column Statement

	Dr.	Cr.	Re- source	Liabil- ity	Loss	Gain
Proprietor		8,000		8,000		
Cash	300		300			
Raw Material	5,000		3,500		1,500	
Wages	1,400				1,400	
Insurance Prepaid	300		225		75	
Fuel	350		250		100	
Rent	200				200	
General Expenses	450				450	
Accounts Receivable	1,700		1,700			
Sales		1,700				1,700
	<u>9,700</u>	<u>9,700</u>				
Royalty				280	280	
Goods-in-Process			2,205			2,205
Finished Goods			600			600
			<u>8,780</u>	<u>8,280</u>	<u>4,005</u>	<u>4,505</u>

*Proof*

Total Resources	8,780	Total Gains	4,505
Total Liabilities	<u>8,280</u>	Total Losses	<u>4,005</u>
Net Gain	<u>500</u>	Net Gain	<u>500</u>

**Other Forms.** When adjustments are numerous, and consist not merely of splitting items between periods and carrying all operating figures to Loss and Gain (or its substitutes), but of

closing accounts in series, one account to another, and then that to a second, and this in turn to a third, confusion is likely to arise from closing an account before all adjustments have been made in it, or leaving it open too long. Adding columns to the six-column statement to show and test the necessary adjustments is likely to prevent the need for correction entries, for then errors will be discovered before they have been incorporated on the books themselves.

**The Eight-Column Statement.** The eight-column statement adds two columns immediately after the trial-balance columns for adjustments that are to be made by journal entries, such as depreciation, interest accrued on securities owned, and interest allowed on partners' balances. Such adjustment items, however, preferably should not include transferring losses and gains, or costs and yields, to Goods-in-Process, or Converted Assets, or Loss and Gain, for then the loss and gain columns of the statement would have virtually no entries (for the items would have been transferred to the summary, or clearing, account by the adjustments, and only the final net figure would be left for the loss and gain columns); and we should have the summary information of an income sheet rather than the detailed information of an operating statement. So only adjustments or transfers short of closing to the final loss and gain account should be put through the adjustment columns. This device of adjustment columns, however, if worth while at all because adjustments are numerous, is usually worth carrying further, so as to show the new trial balance after adjustment, ready to give figures for the balance-sheet and operating-statement columns. This gives us a ten-column statement.

**The Ten-Column Statement.** The ten-column statement, as we have seen, differs from the eight-column statement in having two columns for the new trial balance after the adjustments provided for in the eight-column statement have been made. A time when the ten-column statement is likely to be particularly serviceable is when various departments are run independently but are to share certain expenses common to several or all of them, through a clearing account, and it is desirable to show on such a statement the figures for the balance sheet and operating statement (the latter comprising virtually department figures only). An illustration follows.

notes are not worth face value, and theoretically should not stand on balance sheets at such value. If we are to set up an allowance for this fact, however, we should also set up the contrary allowance for notes payable not yet due and never discounted. Then, logically, we shall see that if we are to figure discount on notes given for bills for merchandise, both receivable and payable, we should theoretically also figure discount on bills for which notes have not been given; for a bill collectible in two months is worth less to-day than one due to-day. This, however, would usually involve a tremendous amount of labor and would not usually produce enough difference on the balance sheet to make it worth while. It is not usually done unless a final settlement is about to be made, as when a new partner is to be taken in, or a partner is retiring, or a business is sold. The complementary entry is to the appropriate interest account.

### QUESTIONS AND PROBLEMS

1. The merchandise account on the general ledger is debited for \$150,000 and credited for \$100,000. The merchandise inventory is \$75,000. By each of the three methods of closing the ledger, close the merchandise account and carry the profit or loss to Loss and Gain. Show complete index references.
2. From the information given below construct a six-column statement.

#### *Trial Balance of A & B Co.*

Proprietor A		57,000
Proprietor B		25,000
Bills Payable		19,000
Bills Receivable	27,000	
Accounts Receivable	20,000	
Accounts Payable		25,000
Real Estate	45,000	
Merchandise		4,000
Commission		3,000
Interest	1,000	
Wages	35,000	
Expense	5,000	
	<u>133,000</u>	<u>133,000</u>

The real estate is now worth \$44,500; the merchandise inventory is \$51,000; commission is owed, \$1,000; wages are owed, \$500; \$500 is owed for expenses; interest is accrued in favor of the business, \$500.



3. The trial balance of a business on Dec. 31 is as follows:

Notes Receivable	90,000	
Notes Payable		20,000
Accounts Payable		13,900
Commission		17,000
Wages	17,000	
Real Estate	45,000	
Merchandise	50,000	
Rent	7,000	
Interest		100
Royalties		5,000
Proprietor		153,000
	<u>209,000</u>	<u>209,000</u>

The real estate has depreciated to \$44,000; the inventory of merchandise is \$75,000; \$800 worth of royalties have accrued in favor of the business; rent has accrued against it, \$1,000; interest has accrued against it, \$60.

From the information given construct a six-column statement.

4. Construct the ledger incorporating totals and balances of all accounts shown on the six-column statement below, and close it. In closing use the direct ledger method. From the ledger draw up a balance sheet. How does it compare with the resource and liability columns below?

	Dr.	Cr.	Resource	Liability	Loss	Gain
Cash	25,000	20,000	5,000			
Mdse.	90,000	80,000	57,000			47,000
Accounts Receivable	122,000	100,000	22,000			
Accounts Payable	70,000	74,000		4,000		
Real Estate	36,000	3,000	33,000			
Fixtures	8,000	1,000	7,000			
Depreciation	4,000				4,000	
Expense	23,500	500	300		22,700	
Interest	1,000		200		800	
Commission	100	1,100		100		900
Capital Stock		100,000		100,000		
	<u>379,600</u>	<u>379,600</u>	<u>124,500</u>	<u>104,100</u>	<u>27,500</u>	<u>47,900</u>
			104,100			27,500
			<u>20,400</u>			<u>20,400</u>
Net Profit						

5. The following accounts are on the ledger of a business.

CASH	[p. 9	INTEREST	[p. 14
105,500	100,000	700	200
CAPITAL STOCK	[p. 10	COMMISSION	[p. 15
	50,000	1,700	2,400

MDSE.	[p. 11	REAL ESTATE	[p. 16
67,000	50,000	20,000	
EXPENSE	[p. 13	RENT	[p. 18
8,300	300		300

Using the information to follow, close the ledger directly, without the use of journal entries.

There is an accrued interest liability of \$100; of the credit to rent, \$200 is prepaid; real estate has depreciated \$500; the merchandise inventory is \$35,000; \$1,200 worth of expenses are unconsumed; we have accrued in our favor \$250 for commission.

6. The following ledger balances are on consecutive pages (beginning with page 1) of the ledger. Sales, \$145,000; Returned Sales, \$20,000; Mdse. Inventory 1/1/20, \$40,000; Purchases, \$130,000; Returned Purchases, \$10,000. The inventory of merchandise at closing, 1/1/21, is \$50,000. Enter the closing inventory of merchandise on the books, and close the ledger balances directly on the ledger to the clearing account. Carry the final profit to Loss and Gain.
7. (a) If a controlling account is kept for general expenses which are adjusted at the end of the fiscal period, how does the controlling account at that time become adjusted to the facts.  
 (b) The balance of General Expenses on the general ledger is \$7,578. The balances on the accounts of the expense ledger are as follows: Wages, \$5,000; Insurance, \$248; Taxes, \$500; Interest, \$45; Rent, \$250; Telephone & Telegraph, \$120; Light, \$312; Heat, \$488; Depreciation, \$200; Supplies, \$140; Postage, \$275. At the end of the fiscal period inventories are as follows: insurance, \$200; rent, \$50; supplies, \$70; postage, \$75. Liabilities not yet on the books are: wages, \$220; taxes, \$75; interest, \$20. Transfer all expenses of the period by journal entry to Goods-in-Process on the general ledger, and show both general and subordinate ledger for these items.
8. Enter the following transactions (which are identical with those of problem 1, chapter XI) in the appropriate labor-saving books, with controlling accounts, and post to the appropriate ledgers. Carry all expense items to a single expense account.

The proprietor invests \$15,000 worth of merchandise and \$5,000 in cash.

Rent is paid, \$200; postage, \$120; stationery, \$50.

Goods are sold to Bay, \$1,000; Gay, \$800; Way, \$2,000; to cash customers, \$1,500.

Wages are paid, \$200.

Cash is received from Bay, \$1,000; Gay, \$800; Way, \$1,000.

The proprietor withdraws \$100 for his personal use.

The inventory of merchandise is now found to be \$12,000; the expense inventory is found to be \$200; and an expense liability amounts to \$50. Record these conditions by journal entries, adjust the books for the balance sheet, and show the balance sheet.

9. Show six complete entries, under the six-account treatment of interest, of which each debit expresses the same condition as the corresponding debit to the single account for interest described in the first half of the paragraph entitled "A Single Account for Interest" on page 210. Show six corresponding entries of which each credit expresses the same condition as the corresponding credit to the single account.
10. The following transactions are to be entered in complete form, with full details and index references; ~~the resulting figures are to be carried through a ten-column statement~~; the books are then to be closed as for the end of a year, and a balance sheet for the beginning of the new period is to be shown.

Walter Dickens and Charles Scott form a three-year partnership under the name of Dickens & Scott. Under the terms of the partnership agreement the profits and losses are to be shared as follows: Dickens one-third and Scott two-thirds.

The books to be used are a journal, a special-column cash book, a sales book, a purchase book, ~~a voucher register~~ (not used for merchandise or for wages), a sales ledger, a purchase ledger, and a general ledger. Six per cent. should be used for interest and discount. At the end of the period, the inventory of merchandise is \$44,900; of stationery, \$150; of wrapping supplies, \$100. Depreciation of store equipment is \$20; accrued taxes are \$75. In determining and recording profits, care should be taken that all necessary additional facts are considered.

January 1. Dickens invests \$20,000 in cash. Scott invests: \$5,000 in cash; store equipment worth \$2,000; a note of G. Stone for \$3,000, payable March 1, with interest; a note of O. Holmes for \$5,000, due January 16, without interest; a note of R. Wood for \$5,000, due February 1, with interest. All notes have run since December 1.

January 2. A store is leased for two years and rent is paid for three months, \$450. The business buys on account from Brownlee Bros. \$10,000 worth of merchandise; for payment in 10 days 6% discount is offered. Office furniture is bought on account from Empire Desk Co., \$500.

January 3. Buy merchandise from Briggs & Son, \$5,000. Buy stationery from Watermark Co. for cash, \$200. Two salesgirls are hired at \$15 per week.

January 4. Scott withdraws \$100 to pay his personal bills. Sell merchandise on account: H. Henry, \$2,000; W. Whitman, \$3,000; S. Foss, \$5,000. Foss ~~gives~~ a note for his merchandise, payable March 5 without interest — the bill is due on that day.

January 8. Buy merchandise, \$10,000, from Brownlee Brothers, subject to 6% discount for payment in ten days. Pay salesgirls' wages, \$20, for previous week's services.

January 9. Pay Brownlee's bill of January 2, taking advantage of the discount.

January 10. Discount Foss's note at the bank. Pay \$100 for freight on merchandise received. Buy store sign, \$50. Sell R. Wood-



worth merchandise on account, \$4,000. Sell merchandise for cash, \$100. H. Henry pays his bill.

January 11. Buy merchandise on account from Pope Bros., \$3,000. Sell Henry merchandise, \$10,000, and receive in part payment cash, \$5,000.

January 15. Pay wages as agreed. Pay insurance, \$75 for a one-year policy covering merchandise, and \$250 for a three-year policy covering the lives of the partners in accordance with the partnership agreement. Give merchandise, cost price \$75, sales price \$100, to pay for advertising at a Bazaar. Whitman and Woodworth pay their bills. Holmes pays his note.

January 20. Pay Brownlee's bill of January 8, and pay Pope Bros. \$2,000 on account. Pay Empire Desk Co.

January 22. Pay a commission of \$278 to salesmen selling on commission, and \$200 for remodeling the store. Pay wages as agreed. Buy at a bankruptcy auction the stock of Long Brothers for \$50,000, paying \$10,000 in cash, the balance to be paid in four equal monthly installments due on the 15th of each month.

January 29. Pay wages as agreed. Buy reference books on account, Corner Book Store, \$50.

February 2. Interest \$4.10 is shown as earned by the bank statement. \$15 disappears from the cash drawer. Whitman buys \$12,000 worth of merchandise on account. Sell Foss merchandise on account, \$3,000. Wood's note is paid. Wrapping paper and twine are bought from Fordyce & Company, on account, \$170, terms 6% in ten days.

February 5. Pay wages as agreed.

February 7. Pay Fordyce & Company. In preparation for payment to Long on the 15th we draw a draft on Whitman, for \$10,000, payable February 15 (the day on which Whitman's bill is due) without interest. Whitman accepts the draft.

February 10. The books are closed preparatory to admitting a third partner to the business.

## CHAPTER XV

### AUXILIARY RECORDS

**Types of Auxiliary Record.** Much information expressible in figures and in tabular form is of importance in connection with bookkeeping records, even though it does not get recorded in debits and credits. Some of this consists of details applicable directly to debit and credit items, such as the classification of accounts receivable by date of required payment, and some has no such direct application but constitutes parallel information, such as number of sales made, number of articles manufactured, number of tons of fuel burned. Let us examine first the bookkeeper's records.

**The Use of Petty Cash.** In most businesses many kinds of expenditure are frequent but small in amount. The books would be unnecessarily burdened if each expenditure of this sort were given full bookkeeping recognition. Such items, moreover, being small, require less formality of vouching than normal items. Usually, therefore, some one is designated to keep a petty supply of cash for such expenditures, and to keep the "petty cash account." One convenient method of handling this account is to debit Petty Cash through the cash book whenever funds are given to the cashier of petty cash, and then, through the journal at convenient intervals, distribute as debits to the various expense accounts the total amount spent for each since the last distribution, with a credit to Petty Cash. This leaves as a balance on Petty Cash at all times the sum of the petty cash in hand and the amount spent since the last distributing journal entry—ready for the next. Many other methods have been used, but that most widely recommended is called the "impressed system." Any one who understands this can easily understand the others when he has examined them, and hence here, as we are not attempting to treat completely all sorts of bookkeeping method, we will illustrate this only.

**The Impressed System of Petty Cash.** The theory of this

system is that when the cashier of petty cash finds the cash nearing exhaustion he makes a demand upon the general cashier for replenishment of the exact amount already disbursed. He "impresses" more cash. He has kept a record of all cash spent (in simple memorandum form, or in simple cash-book form), and at the time of impressment of more cash notifies the general cashier for what the money to be replaced has been spent. The general cashier then draws a check for the exact amount, and debits the replenishment to the accounts for which the original money was spent. He then has a cancelled check as his voucher for this expenditure. So the petty expenditures are entered on the general books in summarized form (all items of a kind combined in the report requisitioning more money), but are entered late because of the fact that they are entered at the time of replacement rather than of original payment. In case of need of reference to the actual payment, of course, the petty cash account is consulted. The process is repeated as often as replenishment becomes necessary. Except for the initial entry when the petty cash fund is first established, this is all there is of the system. The initial entry simply debits Petty Cash and credits Cash. No other entries are ever necessary for Petty Cash unless the size of the maximum fund is increased or reduced. Petty Cash represents a subdivision of general cash — the cash held by a special cashier; and of course the cashier of petty cash must at all times have on hand either cash or vouchers for the full amount of the petty-cash fund; and at the close of the fiscal period he will take pains to get replenishment and so have actual cash as called for by the balance sheet, and thus the general books will have record of petty cash expenditures for the period. The whole process is illustrated below, on the supposition that the general cash book already has several convenient special columns.

## GENERAL CASH BOOK

*Disbursements*

				<i>Wages</i>	<i>Travel Exp.</i>	<i>Post- age</i>	<i>Sundr.</i>
Jan. 1	58	Petty Cash	To establish, #878				50 00
15	✓	Sundries	Petty Cash replenished, #910	6 00	14 00	17 00	
	26	Freight & Cartage					3 00



PETTY CASH BOOK

Receipts			Disbursements		
Jan. 1	Received check #878	50 00	Jan. 2	Express — Plans	2 15
				Car fares — W. J. M.	50
				Postage — Parcel Post	83
			8	Travel — L. M. H. — Hamilton	6 18
				Express — Ink	85
				Postage — Stamps	15 17
			10	Wages — A. H. J. — Sunday	6 00
				Travel — R. F. P. — Groton	7 32
			14	Postage — Cards	1 00
					40 00
				Summary	
				Wages	6.00
				Travel	14.00
				Postage	17.00
				Frt. & Cart.	3.00
				Balance	40.00
		50 00			
		10 00			10 00
15	Balance	40 00			50 00
	Replenishment check, #910				

**Note Book, or Bill Book.** When notes receivable and notes payable are handled, it is important to have adequate reminders when they are due. If one is not prepared to pay notes payable and accepted drafts as they mature, one's credit is seriously impaired and business thereafter will be conducted under a handicap. If one does not present notes receivable and accepted drafts for payment when due, one loses the use of the money, and, what is often far more serious, any endorsers on the notes and drafts are released from their liability to pay in case the makers or drawees refuse or are unable to pay. A common form of book for notes and drafts contains full information about each, showing receivable and payable items separately (commonly at opposite ends of the book), and giving each note and draft a number. Then entries may refer to them by number, as N. R. (Note Receivable) #249, N. P. #121, and avoid detailed explanation. A line is given for each note or draft, and columns are provided for the date of entry, number of note or draft, maker of note or drawee (payer) of draft, endorsers of notes or drawer and endorsers of drafts, date of note or draft, terms of payment, and date due. As a ready reminder of the day for payment, a column is provided for each month in the year, and opposite each note is given in the column for the appropriate month the day on which it is due. When many notes are handled, several columns for day due are provided for each month, as 1-10, 11-20, 21-31, or 1-8, 9-16, 17-24, 25-31. Thus a glance daily down the appro-

priate column shows whether provision must be made at once for any item.

**Accounts-Receiveable Book and Accounts-Payable Book.** Not only in most businesses in which capital is not overabundant, but also in businesses with abundant capital, it is desirable to make the fullest use of all capital available. Capital not needed for the main enterprise of the business should be utilized in side lines, or should be invested outside; and capital set free during the dull periods of a seasonal business should be applied temporarily to some enterprise. This means a reasonably close margin of free cash at all times: and that means, in turn, watching payments and payables and collections and collectibles, so that cash may be available when needed and not be lying idle when not needed. One should know what cash should be coming in during any month, and what bills should be paid. This is provided for by forms which distribute accounts receivable and accounts payable over months as soon as they are entered in the books of original entry. The sales book itself, for example, may be provided with such columns, in which case it may well be called an "accounts-receivable book." In businesses in which discounts are given for early payment of bills, payments are likely to be made earlier than the maturity day, and then care must be taken to see that items paid early do not remain, as if collectible, in the column for the later date. This is easily accomplished by cancelling the amounts of such bills in the columns for due days and entering them in the columns for the months when paid. If any items are not paid either in the months when due or earlier, they are cancelled and carried forward to the subsequent months. When discounts are taken, they also may be entered in this book, for completeness of record. Then the total of the amounts shown as collectible in any month and not cancelled, plus the amounts brought in from other months as paid early or late, shows the collections of the month and should agree with the cash-book collections for the month. The total discounts for early payment reported here should also agree with the discounts shown on the cash book. Sometimes this accounts-receivable book is substituted for the accounts-receivable ledger, in which case Accounts Receivable is not a controlling account, of course. One form of accounts-receivable book follows.

## ACCOUNTS-RECEIVABLE BOOK

[illegible]



It will be noted that posting is made from the first "amount" column, but not from later columns. They are statistical only. Bill #621 though entered as due in March was paid in January; #622 was similarly paid, but twenty days later; #623 is still due, in February; #624, though due in January, still remains unpaid. Bills paid early require no "due" notation in the transfer month; but bills overdue should have a blanket date in the later month. The footings for January are taken, for they should check with the corresponding items of the cash book. Those for February and March are not yet taken, for other items will be added later. Of course the accounts-payable book can be similarly treated.

**Ticklers.** When many notes are handled, or many accounts are to be collected or paid, it may pay to have a book devoted exclusively to "tickling" the memory of the person responsible for their presentation or payment, and providing a space for each business day of the year. This space then is preferably a block rather than a column, with all items due that day and nothing else in that block, and contains all the information necessary to identify the item and prepare for its care. A bank making collections for others must be particularly careful not to neglect its responsibility. A tickler might look as follows:

*July 12*

<i>Number</i>	<i>Payer</i>	<i>Endorser</i>	<i>Where Payable</i>	<i>Amount</i>	<i>For Whom Collected</i>	<i>Pd. Cr. Remarks</i>
783	A. Browne	C. Davis	Canal National	753.10	E. French	
815	G. Henry	I. Jacobs	63 Congress St.	618.18	K. Lincoln	

Check marks will show that the items have been collected, and that they have been credited to those for whom they were collected, when such marks are appropriate.

**Other Auxiliary Records.** Records of the sort now to be discussed are not standard and universal, for they differ with the type of business, and among businesses of the same type they differ with the circumstances. They constitute what are commonly called statistics, and differ from the statistics already discussed in that either they are not expressible in dollars and cents, or they are not expressed in terms of debit and credit, even though expressible in dollars and cents. They are required for intelligent interpretation of the debit and credit figures. Problem 3 of Chapter VI, page 67, is a good illustration. To know what you pay

For a thing is not very enlightening unless you know just what the thing is that you get. Many business realities are too complex to be clearly expressed by a simple, or even a complex, term. They must be analyzed and expressed in figures, or even in complexes of many kinds of figures at once. This is true not only of purchases, but of expenses (like wages, insurance, and rent), of production, and of sales; and many of these hinge upon chains of earlier statistics, which in turn hinge upon others. A few only of these can be given here, but they suggest the kind of thing that good accounting requires — for the task of the accountant to analyze and interpret a business.

**Statistics of Purchases.** Suppose a shoe dealer finds during one season that he is continually losing an opportunity to make a sale because though he can suit his customer in style and quality and price he has not shoes that fit. What is his remedy for the future? Clearly next season to change the sizes on his purchases and orders. But how? Unless he knows what he ordered for this season, and what sizes he failed to provide, he is quite as likely to go wrong again next season. Suppose a manufacturer of shoes finds that certain lots of leather when cut for shoes have much waste because of small scraps, or are of poor quality, or are of varying quality. What is his remedy for the future? Unless he has records which show where the particular lots came from, and what sorts of leather they actually contained, he cannot proceed more intelligently next year. He cannot tell what sorts not to buy, nor of whom not to buy, nor can he be even sure whether the waste was due to poor shapes of skins or to careless cutting on the part of his cutters. Suppose a manufacturing chemist buys raw material in many markets, and finds that some days he gets ten hundredweight of a certain product from a ton of raw material, and on other days he gets only nine hundredweight, and on some eleven. What is his procedure to get eleven hundredweight, or to learn whether nine, ten, or eleven, is most profitable for him? So many different elements enter into the cost that even though he finds that it costs more in proportion to produce even hundredweight than nine, it may still pay to go on doing some of the things that enter into the higher cost, for they may not be the elements that cause the higher cost. In other words,

to say that a thing costs more is not to say that everything done for that thing is unwise. The question is, What makes it cost more? Perhaps the raw material contains more moisture, so that a ton has more worthless water that goes off in steam. Perhaps more impurities go to make up the weight. Only statistics of the content of raw material purchased will tell him. Perhaps the chemical processes are not carried far enough, and not all the valuable constituents of the raw material are extracted. Only statistics of original content compared with final yield will show whether the waste is excessive. Perhaps the raw material is refractory, and extended treatment, involving more hours of labor and power, is necessary to extract the proper amount. Only statistics will show that this material is not adapted to the need.

**Statistics of Expenses.** Suppose a merchant finds that between two stores that he manages, with the same line of goods and the same sort of clientele, one has a wages cost of \$20,000 with \$100,000 of sales, and the other a cost of \$22,500 with \$150,000 of sales. What can he do about it? There must be a reason for this difference. Several possible reasons suggest themselves. First we note that it costs in one store twenty cents for wages to sell a dollar's worth of goods, and in the other fifteen. There may be too many clerks for the volume of business; the clerks may spend too much time chatting with customers, and therefore serve a smaller number of customers each; the individual sales may run smaller with the same amount of attention given by the salesmen; the salesmen may too readily induce customers to take goods on trial and thus incur too many returned sales, forgetting that it takes almost as long to sell an article that comes back as one that stays sold. Only statistics will show which of these various suppositions is true. Very likely some of the clerks are shirkers and they bring down the average. Statistics of individual sales will detect this. Suppose the delivery charge for one year is much higher than in another, not only in total but per dollar of sales. The explanation may be higher delivery wages, longer distances for delivery, more frequent deliveries or deliveries of smaller orders, increase in C.O.D. orders, slower rate of travel, or dawdling. How shall one tell? Statistics can give number of deliveries, mileage, average size of deliveries,



number of different places visited, number of C.O.D. orders, average rate of travel, etc.

**Statistics of Production.** In manufacturing businesses the common standard of statistical comparison is production. If purchases and expenses go up or down, they should go in a recognizable relation (not necessarily in the same proportion, as we shall see in the chapter on finding costs), and hence statistics of production are essential to adequate comparative studies; but the dollar of value produced is not always adequate as a standard of comparison, for both more productive service and more profit may sometimes come from product with a low selling price than from product with a high price. A greater service may be rendered to the community by producing \$120,000 worth of one kind of goods at a cost of \$100,000 than by producing \$240,000 worth of another at a cost of \$225,000, and it would pay the proprietor to make the lower cost goods, for he gets a larger margin of profit, and even more wages and more employment for factory facilities may be provided — for the cost of raw material may be so much higher in the second case than in the first as to make all the difference in selling price. Clearly here neither costs nor profits can be put on a dollar basis of comparison. Comparisons must be made on a unit of productivity other than dollars, and that unit must take into account the difference in the nature of the products. This is no place to establish standards of comparison for varying products; sufficient here is it to point out that such standards can be established and comparisons can be made only through statistical analysis of the situation. They would involve, to give only a few illustrations, such things as horse-power consumption, labor hours, machine hours, and idle hours of machinery.

**Statistics of Sales.** Sales statistics have already been discussed somewhat in connection with those of purchases and expenses. Usually they are used as a basis for making a comparative study of the others. A few, however, are more or less independent. The most interesting of these is stock-turn. How many times a year is the stock of goods sold out and replenished? If a man can sell his stock of goods and replenish it six times a year, he needs, so far as stock is concerned, only one-sixth as much capital as the man who can sell his stock only once a year; in other words, the

man who can run a store successfully on a two months' supply of goods has only one-sixth as much money tied up as the man who requires a year's supply. Statistics of stock-turn are therefore very important.

**Other Statistics.** Many other items not directly connected with any so far mentioned are worthy of careful study. Much attention in large establishments should be given to what is commonly called "labor-turnover." How many employees are employed in a year, on the average, to keep one position filled? If the business has 2,000 positions, and 4,000 different persons were employed to fill those positions in any year, the labor-turnover in that year was two. This is typical of the use of statistics not only non-financial, but not directly connected with any financial figures. Many businesses, from such figures as these, moreover, have learned how much it costs them, on the average, to change employees.

**Methods of Gathering Statistics.** Many of the figures mentioned involve special devices or special records. Many, on the other hand, can be gathered by the utilization of devices already provided for bookkeeping purposes merely by the addition of a column or two and an additional item for each entry. The number of sales made is easily got by numbering sales consecutively and using the number on the sales book — an automatic numbering machine can be operated by an inexpensive clerk or office boy. Individual clerk's sales are easily entered from sales slips. The railroads find passenger-miles (number of passengers multiplied by the number of miles traveled by each) by multiplying the number of tickets sold between each two stations (reported necessarily by ticket agents for income purposes) by the number of miles between the stations named. Ton-miles (number of tons multiplied by number of miles hauled) are got similarly from necessary freight reports. The number of train miles is got from necessary conductors' reports.

**Advantages of Putting Statistics on the Ledger.** One of the advantages of double entry is the test by the trial balance, which, as we have seen, does not prove that figures are right but does give very good presumptive evidence that they are right. If statistics have no check against error, they are less valuable than

if well supported by presumptive evidence. It is possible to run through the books of original entry and the ledger any statistical figures that are expressible in dollars and cents, for it is possible to express a double aspect of such figures and thus to put them into double entry and subject them to the trial-balance test of correctness.

**Statistical Accounts in Municipal Administration.** A good illustration of this is in municipal accounting, in which it is necessary to keep track of appropriations, of commitments against appropriations, and of expenditures against appropriations. Yet some of these do not constitute transactions normally expressed in debit and credit entries. Indeed, when the municipal department does not handle funds directly but handles its finances through the city treasurer, it has no transactions in the ordinary sense, but it does need statistics of its operations. It may keep statistical accounts by ordinary bookkeeping methods, though of course it will use titles for its accounts differing from ordinary commercial titles. It wishes a record of money appropriated by the city government for its use, and it wishes a record of any amounts of expenditure, or expenditure contracted for, that it has already applied against each appropriation. It should not be dependent on the treasury, moreover, for its information. It needs more information than the treasury can give it, and much information it wishes in form different from that which the treasury uses. It may wisely therefore keep its own set of books, using titles different from those of the treasury not only because confusion should be avoided but because the point of view is different. Having no cash and no accounts receivable, for instance, it will have no accounts for those items; but it will wish to know what cash the treasury has available for it to draw upon, and what the treasury is collecting for it on bills. It will have one or more appropriations, or authorizations, to spend money. The appropriation is what has been granted to the department for its purposes, and hence the department will credit Appropriation for the amount. It will correspondingly debit Appropriation for amounts chargeable against it, thus reducing the balance of appropriation. The balance of the account is the available appropriation remaining for further activity. It is clear that appropriations cannot



be made out of nothing, however. The funds that will supply an appropriation constitute the complement of the appropriation, and consequently accounts representing them will be debited when the accounts for the appropriations are credited. If the funds are expected to come from revenues of the current period, Estimated Revenues is debited (an asset account). When those revenues become real, this account is credited (for the transfer of the asset from one classification to another), and a new account representing the new status of the asset is debited. If the money is already in the hands of the treasurer, ready to be drawn on warrants, the new account may well be Current Funds. This principle may be carried through all a department's transactions, giving it full information in spite of the fact that it has no actual assets and liabilities independent of those recorded in another form on the treasurer's books.

**General Comment.** Railroads gather such a multitude of operating statistics (for such things as car loads, train loads, fuel consumption, cars switched, and rails replaced), and when these are intelligently gathered and intelligently used get so much light on the success and economy of operation, that it is worth while for one contemplating a system of statistics to study railroad reports and see what sorts of thing the railroads use — realizing that they publish only a very small part of what they use. Two cautions with respect to statistics must be constantly borne in mind: first, that figures gathered but not intelligently used give no information — they give rather a dangerous because false sense of security; second, that figures that purport to be one thing but really are another are dangerous, for they lead to baseless conclusions — the figures must be very carefully gathered and must be so clearly labeled that they can never be mistaken for what they are not.

### QUESTIONS AND PROBLEMS

1. (a) A new bookkeeper takes over the books of a business. He finds that petty cash is debited \$50 on the books. How should he verify its correctness?
- (b) At the end of the month there is \$20 in the petty-cash drawer, and vouchers for the balance indicate expenditures as follows: Charity \$2.00, Cleaning \$15.00, Postage \$10.00, Freight \$3.00. It is decided

that \$25 is a sufficient sum for the petty-cash fund. What entries should the new bookkeeper make in the cash book for replenishment at the new figure, provided there are in the cash book special columns for Freight and Postage.

- 2. A furniture store sells furniture to customers on the basis of four monthly installments. What kind of device should you suggest for keeping track of the installments?
- 3. An ice company, for which a summary statement is given below, wishes certain statistical information.

Sales			\$300,000
Ice on hand 1/1/20	\$ 5,000		
Harvesting Costs	<u>200,000</u>		
Cost of ice handled	\$205,000		
Ice on hand 12/31/20	<u>20,000</u>		
Cost of ice sold		\$185,000	
Delivery Expenses			
Maintenance of Equipment	\$20,000		
Wages of Teamsters	45,000		
Administrative Expenses	<u>35,000</u>	<u>100,000</u>	
Total cost			285,000
Profit			<u>\$15,000</u>

Ice was sold for \$.60 a hundredweight. An average of 40 teamsters were employed. Deliveries were made 300 days in the year. The average delivery is one hundred pounds.

- Find (a) hundredweight sold  
(b) tons sold  
(c) delivery cost per hundredweight  
(d) average delivery (tons) per man per year  
(e)     "     "     "     "     "     "     day  
(f)     "     "     (cwt.)     "     "     "     day  
(g)     "     number of deliveries per man per day  
(h) percentage of delivery cost to sales  
(i)     "     "     cost of ice sold to sales  
(j)     "     "     administrative expense to sales  
(k)     "     "     profit to sales  
(l) profit on average sale

If the loss by melting of ice was \$20,000, how should you show this loss on the operating statement?

## CHAPTER XVI

### SOME PECULIARITIES OF CORPORATION ACCOUNTS

**The Essential Nature of Corporations.** Many features distinguish corporate from private ownership, but most of them are legal or economic and have no accounting significance. Legally a corporation is usually perpetual, self-continuing, whereas a single proprietor's business stops with his death, and a partnership is dissolved with the death or individual bankruptcy of any partner or at the expiration of a term of years. This has accounting significance because in two of these cases a death involves settling the affairs of the business and in the other case it does not. In a corporation usually the stockholders have no personal liability for any debts of the corporation (beyond their investment, or original required payment for capital stock), but a single proprietor or a partner is liable to the full extent of his property for all the debts of his firm. This has accounting significance in case of bankruptcy, for in two of these kinds of proprietorship entries have to show individual liability and payment, and in the other no such entries are required. In private proprietorships, control is direct; but in corporations it is by a representative body, a board of directors, elected by the stockholders. This has accounting significance in that authorization for transactions must be shown — for the auditor must know that what was done was authorized, and his evidence is the minutes of the stockholders' and directors' meetings. From the general accounting point of view, except for the technical matters just mentioned, which a book of this elementary sort cannot discuss, the essential difference between a corporation and a private ownership is that the private ownership usually recognizes at all times the share of the business owned by each proprietor in terms of dollars and cents, whereas in a corporation the proprietorship is not covered by accounts with individuals, but by an account or accounts representing the whole group of stockholders, and then no one account may even attempt to give the value in dollars and cents of the total proprietorship. The chief proprietorship account is therefore



peculiar in its nature and needs careful observation. Under recent practice two kinds of certificates of ownership are issued, one with and the other without par value. We will discuss first the older, with par value.

**Capital Stock Account in Practice.** Capital Stock covers the face or par value, usually \$100, of stock certificates. It is a controlling account kept in the main ledger, and is matched by a stockholders' ledger in which are accounts showing how many shares of stock, of what par value, are held by each individual stockholder. This ledger is used to determine the amount of dividends payable to each stockholder, and voting rights at stockholders' meetings; and of course all transfers of stock are entered in it. Often a corporation issues two or more kinds of stock, common and preferred, or common and two kinds of preferred, first and second. Preferred stock is a first claim to dividends up to a fixed percentage of dividend, and commonly has a preference over common in distribution of assets in case of dissolution; common stock is a claim to all dividends and assets after the claims of preferred stock are satisfied. So if profits are very high, common stock is often worth more than preferred, but if profits are low or moderate, preferred is likely to be worth more than common. The accounts distinguish preferred from common, as Preferred Capital Stock and Common Capital Stock, but there is no other accounting distinction that needs to be made between them, and what is said later about Capital Stock applies to each as each is concerned. Theoretically the par value is supposed to represent actual value of property invested in the corporation, but in reality it may represent either more or less. In some States, the law forbids the issue of stock for a larger par value than the amount actually invested in the company, but no State forbids an issue of stock smaller than the investment. Since, moreover, values are often problematical and other things than cash can be accepted in return for stock (like real estate, machinery, and patent rights), even where the intent is to issue stock only to match actual investment it is hardly possible to know that the stock is represented by actual value in property or in rights. Many States, moreover, allow stock to be issued in excess of the investment, and to be issued when only a portion of the amount subscribed for

it is paid. In consequence, it may be stated that the relation between the capital stock account and the investment is not fixed by either law or custom. One must know the circumstances of the case before one can say in any particular case what the capital stock account represents. This, however, is not the only uncertainty; for many corporations credit Capital Stock for the amount authorized, even if it has not been subscribed for. So both with respect to the value represented by the stock and the condition of the stock itself, the account for capital stock gives little information. All we can say as a general statement is that Capital Stock represents the par value of stock certificates (that value being sometimes actual and sometimes purely artificial), and that, if there are no items on the other side of the balance sheet showing that the issue has not been paid for or completed, the assumption is safe that (supposing the books kept under some reasonable bookkeeping method) the stock has been issued and is in the hands of stockholders. Par value, in turn, has little significance: it is merely the figure on which dividends are based. If dividends are 5%, the 5% is applied to the par value of the stock, \$100, or \$50, or \$10, or \$1, as the case may be. The various necessary qualifications of these statements, and the necessary methods to make always perfectly clear just what is the status of capital stock, are discussed in the following paragraphs.

**Distinction Between Issue and Sale.** Confusion sometimes exists between issue of stock and sale of stock. It should be observed that a corporation on its principal books knows no stockholders as individuals, but recognizes them only as holders of stock certificates. When, therefore, the full authorized stock has been issued, no one can become a stockholder except by buying stock from some one else. Such transfers of stock between individuals, whatever the price paid, do not affect the accounts of the corporation except on the subordinate stockholders' ledger, of course, for the amount of capital stock is not affected and the assets of the company are not affected by any exchange between individuals. The discussion following is concerned chiefly with entries for the issue of stock in the first instance, in which the corporation gets what is paid for the stock — in other words, stockholders' investment. The only concern of the corporation in transfers



of stock later, except the record of transfer on the stockholders' ledger, is when the stock has once been issued and later becomes the property of the company, as we shall observe in due course.

**The Proper Method of Handling Capital Stock.** It is obvious that any bookkeeping method that leaves in doubt the status of capital stock is deficient. Capital stock authorized should be distinguished from (1) that subscribed for but not issued, (2) that subscribed for but later forfeited, (3) that paid for but not issued, (4) that issued, and (5) that once issued but now back in the treasury. It is possible to keep separate accounts for each of these aspects of capital stock, and for most of them it is worth while if the stock has so many aspects. As was pointed out in the preceding chapter, ledger accounts can be kept for all sorts of statistical figures if they are expressible in dollars and cents. Here, for example, we may have on one side Capital Stock Authorized, Capital Stock Subscribed, Capital Stock Paid For, Capital Stock Issued, etc., and on the other side Capital Stock Unsubscribed, Capital Stock Subscriptions, Capital Stock Forfeited, Capital Stock Donated, etc. It is not worth while in a book of this sort to take up all the conditions that apply to stock, for the variations of law among the States create many. We will confine ourselves to normal conditions of sound corporate policy, assuming (1) that in origin stock is issued only when subscribed for, that is, that it is not sold by the issuing corporation like a commodity but the formality of subscription is used, though it may be sold by the corporation if reacquired, and (2) that it is issued only when paid for. The titles used are chosen because they seem best to suggest the content of the accounts, but other titles will serve if they do not lead to confusion, as some titles often used occasionally do.

**Unsubscribed Capital Stock Authorized.** It is by no means essential to show stock authorized, for the figure is purely statistical. If, however, it is desired to show the margin by which the company may receive new subscriptions, this may well appear on the ledger. The account for it, Unsubscribed Capital Stock Authorized, is of course credited for the legal authorization, for the authorization to issue stock is the original source of the assets which are received by the investment of stockholders. The ac-



count to be debited represents the blank stock certificates available for issue, and may be called Unsubscribed Unissued Stock. As soon, however, as any of this stock is subscribed for, the company has reduced its margin of stock for which it may receive subscriptions, and Unsubscribed Capital Stock Authorized should be debited to show this fact on the books. The balance of this account, therefore, represents not the total authorization, but the amount for which the company is still authorized to receive subscriptions, as we shall see below.

**Subscriptions.** When an intending investor in a corporation subscribes for its stock, he gives his pledge to pay it something, and it gives him a pledge to issue the stock if he fulfills his pledge. From the point of view of each a double aspect appears. The corporation gets an asset and assumes a liability. Both should appear on its books. It should debit Subscriptions to Capital Stock, and credit Capital Stock Subscribed. The former represents its possession of a promise of the subscriber to pay, akin to Notes Receivable, and the latter represents its promise to render a service, akin to Notes Payable. Usually subscriptions are payable in installments, and then various installment accounts, like Subscription Installment #1, are substituted for the single Subscriptions to Capital Stock suggested above. If we have an account for Unsubscribed Capital Stock Authorized, however, as suggested in the preceding paragraph, still another entry is necessary at the time the subscription is received. The receipt of these subscriptions has reduced the authorization to take subscriptions. It has not yet reduced the right to issue stock, for none has yet been issued, but already we have shown the pledge to issue, in Capital Stock Subscribed, and hence it is wise to reduce at once our balance of authorization, lest we may receive over-subscriptions inadvertently. Our unsubscribed unissued stock is also reduced, of course, by receiving these subscriptions, and hence we should reduce the account representing it. We merely reverse our original entry of authorization by the amount now subscribed for — debiting Unsubscribed Capital Stock Authorized and crediting Unsubscribed Unissued Capital Stock. When payment is made, Cash is debited, and Subscriptions to Capital Stock, or Installment #1, etc., is credited. The payment may in-

volve another entry, moreover. If the subscription is paid in full, the stock should be issued, and entry must be made for fulfillment of the obligation by the company. As we debit Notes Payable and credit Cash when we pay a note, so here we debit Capital Stock Subscribed (the account representing our liability to issue stock) and credit Capital Stock (the account representing the actual issue). When all subscriptions are paid and the stock is issued, the entries made will cancel the old debit to Subscriptions and credit to Stock Subscribed, and the net effect is just what we want in the end, Cash debited and Capital Stock credited, with all the intermediate steps shown. These intermediate steps, as a matter of fact, should usually show, for it is important to keep track of installments. Where the law provides that stock shall not be issued until fully paid for, collections may be made in several installments before any stock is issued; and hence the entry for issue will not parallel the individual entries for payments, but will be made only after a series of payment entries.

**Illustrative Entries.** We may now well review our progress up to this point by observing concrete entries. Let us suppose: (a) the authorized capital stock is \$500,000; (b) \$400,000 is subscribed for at par, payable in two installments of \$200,000 each; and (c) one installment is paid.

(a) Unsubscribed Unissued Capital Stock	500,000	
To Unsubscribed Capital Stock Authorized		500,000
(b) Subscriptions to Capital Stock Installment #1	200,000	
Subscriptions to Capital Stock Installment #2	200,000	
To Capital Stock Subscribed		400,000
Unsubscribed Capital Stock Authorized	400,000	
To Unsubscribed Unissued Capital Stock		400,000
(c) Cash	200,000	
To Subscriptions to Capital Stock Installment #1		200,000

Our trial balance then looks as follows:

Unsubscribed Unissued Capital Stock	100,000	
Unsubscribed Capital Stock Authorized		100,000
Subscriptions to Capital Stock Installment #2	200,000	
Capital Stock Subscribed		400,000
Cash	200,000	
	<u>500,000</u>	<u>500,000</u>

Our trial balance shows us all the facts — \$100,000 margin available for subscription (in two accounts, one debit and one credit), \$200,000 collectible on old subscriptions, \$200,000 in cash, and obligation to issue \$400,000 of stock when the second installment is paid. Now suppose (d) the second installment is paid, and the stock is issued. The two entries follow.

(d) Cash	200,000	
To Subscriptions to Capital Stock Installment #2		200,000
Capital Stock Subscribed	400,000	
To Capital Stock		400,000

Our trial balance will now show our balance of authorization, our cash, our capital stock, and nothing more. It shows what it should. The whole thing is much simplified, of course, by omitting the authorization entirely. Then entry (a) and the second entry under (b) would be omitted, and the first two items on the trial balance would disappear.

**Capital Stock.** The usual practice is to include in Capital Stock only the figures for stock actually issued. If the stock has once been issued and is reacquired, by donation or purchase, it still is issued stock and is included in Capital Stock unless cancelled. Cancellation is usually illegal without special authority. That which is held is shown on the other side of the balance sheet under some appropriate title — so that the issue and the ownership both appear, one as a separate item, often as Treasury Stock on the asset side of the balance sheet, and the other included in the total of stock issued. “Capital Stock Issued” would be a good title for this latter account, but the shorter term is usual.

**Stock Issued at Above Par.** Sometimes stock is originally issued at more than par — say 120. This means that the subscriber agrees to pay \$120 for a share of stock having a par value of \$100. This illustrates the statement made above, that the par value of stock has no definite significance other than the amount which happens to be incorporated in the certificate of ownership. A man who takes stock at 120 is investing \$120 in the business (if the stock has the usual \$100 par value), but his dividends will be based on a par value of \$100. This appears to involve a loss, but



a little consideration shows that it is not so. So far as earnings and dividends are concerned, the result would be the same if the par value were \$50 or \$10 and still the investor invested in the business \$120. The thing that earns profits is not par value (a mere name), but invested capital. The \$120 invested will earn as much whether the share of stock given for it has a par value of \$100, or \$50, or \$10. The amount of profit will be the same. Suppose it to be, for one share of stock, \$12. If the par value of the stock given is \$100, the rate of profit will be 12%. If the par value of the stock given is \$50, it will be 24%; if \$10, it will be 120%. In other words, the same profit will give a different percentage on different par values, but when those percentages are applied to the par values for purposes of dividend, the higher or lower rate obtained in the first instance is entirely offset by the application to a lower or higher par value for purposes of distribution. The par value is therefore of no consequence in this connection. (When men say that they had rather have an investment at a discount than at a premium, it is for other reasons than the rate of return — usually because of certain psychological factors in a speculative market.) Issue of stock at above par, therefore, creates in accounting only the awkwardness of having a credit to Capital Stock of par, and a debit to an asset account of more than the equivalent figure. Another element needs record. In this case, the proprietorship claim is not wholly covered by Capital Stock, for more than par was paid. We must consequently credit another proprietorship account for the amount of investment in excess of the par value of stock, and the title should make clear what the account represents. The usual title for excess of assets paid in over those which are represented by capital stock is "surplus." As surpluses may be earned, donated, or invested, it is desirable to distinguish that which is invested, and it may be called "Premium Surplus." Our first entry for receiving subscriptions at a premium, then, supposing instead of (b) on page 254 we have subscriptions for \$440,000, is as follows:

Subscriptions to Capital Stock Installment #1	220,000	
Subscriptions to Capital Stock Installment #2	220,000	
To Capital Stock Subscribed		400,000
Premium Surplus		40,000

The second entry for (b), page 254, would be unchanged, for the amount of stock which has been pledged for issue is still only \$400,000. Entries (c) and (d) would be the same except that the amounts of (c) and of the first part of (d) would be \$220,000 each. The last part of (d) is still for \$400,000. In other words, Premium Surplus is credited when the subscriptions are received, for that is when the surplus asset was received, and needs no further attention unless the subscriptions are forfeited — in which case the correction entry would correct Premium Surplus, as well as Subscriptions, and Stock Subscribed. If one does not mind a little extra bookkeeping labor, and is hesitant about labeling as surplus mere promises to pay premium, one may credit Premium Surplus Subscribed instead of Premium Surplus in the first instance, and then when the last installment of subscription is paid debit Premium Surplus Subscribed (to transfer it) and credit Premium Surplus.

**Stock Issued at below Par.** In some respects, the issue of stock at below par is the reverse of issue at above par. Legally it is not the reverse, for many States forbid issue at a discount. Taking stock at below par at its original issue is taking it before it is fully paid for, and hence is assuming a liability to make up the difference if the company later becomes bankrupt, for the law recognizes responsibility of stockholders up to the par value of their stock; but the deficiency in investment may be made up out of later earnings if the company decides to apply sufficient earnings to that purpose rather than to dividends. When issue of stock at below par is allowable, the entries for the discount are similar to those for premium except that they are reversed. The subscriptions being for less than par, the assets are less in amount than the obligation to issue stock assumed, and hence extra debits are necessary — really deductions from ownership claims. Briefly, the entry for subscription is as follows:

Subscriptions to Capital Stock	360,000	
Discount on Capital Stock	40,000	
To Capital Stock Subscribed		400,000

On payment, the entry is

Cash	360,000	
To Subscriptions to Capital Stock		360,000

For the immediately following issue, the entry is

Capital Stock Subscribed	400,000	
To Capital Stock		400,000

Then the trial balance reads

Cash	360,000	
Discount on Capital Stock	40,000	
Capital Stock		400,000
	<u>400,000</u>	<u>400,000</u>

In a sense, this Discount on Capital Stock represents an asset, for it represents a claim that in case of bankruptcy may be made by creditors against individual stockholders; but collection is so bound with red tape and with exemptions that often it is of slight practical value. That is why some States forbid the issue of stock until fully paid for. Most companies try early to fill the void left by discounts, and withhold some of their earnings from distribution as dividend, and apply them by methods to be described later.

**Donations of Stock.** Stock is sometimes in effect issued at a discount by a device which makes it appear not to be so issued. Sometimes this device is employed to evade the letter of laws forbidding issue at a discount, and sometimes it is an evasion of neither letter nor spirit of any law. In both cases the process usually begins with issue in the ordinary way at par, and is followed by a donation to the corporation by its stockholders of some of the stock which has been issued to them. This in effect, of course, gives the stockholder less stock than the value of the assets turned in, and hence he is in reality taking his stock at a premium. If he takes ten shares for \$1,000, and then donates two shares, he has left eight shares for \$1,000, or the equivalent of eight shares at 125. The point is that the shares are now all fully paid for. The par value of them has now been fully invested. There is now no liability of any stockholder to pay more, and the company has in its vaults, fully paid for, two shares out of ten. It may do as it pleases with these; it may sell them for what it can get, or even give them away in a proper cause; for they have once been fully paid for, and therefore even the severest law is complied with. Of course, too, there is no moral or other reason why the company should not sell them for what it can get, for they



now represent actual assets invested to cover their issue. But do they? That is the crux of the whole matter.

**Donations for Evasion.** If the assets turned in were really worth the par value of the stock, no evasion has been committed. If, however, the assets turned in are overvalued, worth perhaps \$800 for every \$1,000 of stock issued, though put on the books for \$1,000, the donation of stock was no donation at all, but only a return of stock never paid for; and if never paid for, the company, under some State laws, has no right to sell it at less than par. So the evasion has been accomplished by a combination of overvaluing assets and then donating back the stock representing the fictitious portion of the assets. The difficulty in detecting this lies usually in learning what the assets were really worth. Often some of the property given for the stock consists of real estate, machinery, patents, good will, etc., and the value of these is often problematical. If proof can be given that overvaluation took place and that stock was issued for the fictitious value, creditors in the case of bankruptcy of a corporation can recover, but the burden of proof put upon them is usually too heavy. Only in case the amount received for the stock when sold after donation equals the original over-issue can the stock be deemed really fully paid for.

**Donations without Evasion.** Sometimes the donation is without either intent or result of evasion. Often the organizers of a company have great faith in its future but do not expect others to have such faith. They must personally offer special inducements to get others to invest with them. If they need capital, they may be willing to surrender a part of their shares of stock as an inducement to others to join them, in the belief that with new capital they will recoup themselves out of the later profits. Even though the stock issued to them is not greater in par value than the assets which they have turned in, they may be willing to donate some of it. If under these conditions they do so, it is clear that the stock so donated is truly once fully paid for, and even if now given away the assets of the business would equal the capital stock. So the company may now sell the stock for what it can get (and there is often a psychological advantage in offering stock below par) and not be guilty of issuing stock in excess of assets—indeed, what it gets from such sales constitutes assets in excess of its stock.

**Accounting for Donations.** No distinction of treatment can be made between the two cases of donation given above, for it is presumed that whoever keeps the accounts is unaware of the overvaluation. No accountant would consciously enter the property at an overvalued figure, for it is the task of an accountant to tell the truth. He cannot usually, unless he is engaged for that purpose and is competent to do it, investigate the value of all property given in return for stock: he is expected to provide the entries for the actual issue of stock as made. Unless engaged as auditor for such a purpose, he is not responsible for the propriety of stock issues, and he will assume them proper unless something on the face of things discredits them. Assuming proper valuations as given him by the action of the directors, he will treat donations as *bona fide*. Let us now examine the entries. The donated stock had its origin in the return of stock to the corporation as a gift, so that the stockholders have contributed to the business not only all they originally invested but as much more as this donated stock will bring. The total amount of par value of stock issued is not increased by this gift, but if the stock brings anything by sale the assets will be increased, and the ownership-claim of the stockholders will be increased. Then the ownership-claim of stockholders will exceed the par value of stock, and this excess is surplus. We must therefore debit an asset account for the stock donated, and credit a surplus account for the proprietorship-claim created by the asset. Sometimes Treasury Stock is debited, and Working Capital is credited. Since Treasury Stock is usually used for purchases by a corporation of its own stock, it had better not be used also for donated stock; and since "working capital" is vague, and is used in common speech for cash, accounts receivable, and supplies needed to keep a business in normal running condition, it had better be avoided for a very specific thing like donations by stockholders. The following entry suggests what has actually happened.

Donated Capital Stock  
To Donated Surplus

The next question concerns the amount of the entry. Some recommend that the entry be made for the amount that the donated stock is likely to bring at sale. This amount is usually

problematical; and hence the entry can mean little, particularly as one cannot tell from the balance sheet whether much stock is entered at a low price or little stock at a high price. In any case an adjustment entry is almost sure to be needed when the stock is actually sold. It seems wiser, therefore, to enter such donations at par value; for the identical stock appears on the other side of the balance sheet at par (in Capital Stock), and one is as good as the other. No one is likely to be deceived by the item, for any one knowing what donated stock is will understand that it is on the books awaiting disposition and is unlikely to bring par at sale. When donated stock is sold it is obvious that the amount of discount suffered on the sale is just so much reduction in the amount of the nominal donation. So Donated Surplus is debited. If we suppose, therefore, that the donation given above was of \$50,000 par value of stock, and that the stock was sold for 80, the entry for the sale would be as follows:

Cash	40,000	
Donated Surplus	10,000	
To Donated Capital Stock		50,000

**Donations by Individuals to Individuals.** Sometimes the donations do not go through the treasury of the corporation, but are made direct to new stockholders by old stockholders; i.e., the original stockholders make an agreement with each other that each will donate a certain proportion of his stock for a common pool, and that out of this pool will be given to new stockholders a certain number of shares as a bonus with each block of shares purchased. Since this is a purely private matter, between old stockholders as individuals and new stockholders, it does not appear on the books of the corporation in any form. The only question regarding its propriety is the propriety of the original issue — that is, whether the assets given were overvalued; but even that is not a question of donation, but of issue.

**Forfeited Subscriptions.** The law regarding forfeitures of subscriptions is not uniform among the States, and it is unnecessary in a book of this type to take up the various accounting requirements. Suffice it to say that when a subscription has been forfeited, the books must show several things: (1) the loss of the asset in the form of further subscriptions collectible; (2) the can-



cancellation of the pledge to issue stock; (3) the cancellation of any premium or discount involved in the subscription; (4) the credit to a special surplus account of any amounts forfeited to the company by the forfeiting subscriber; (5) any liability that the company may have to meet, contingent or otherwise, for actual payments by the forfeiting stockholder. Working out entries for these is interesting exercise in actual, contingent, and statistical accounts, and is recommended for original work on the part of the student.

**Converting Private into Corporate Business.** The method of converting a private business into a corporation is more or less obvious. The steps are merely the logical steps required by the nature of each form of business. If the new business is to take over the old books, the only new accounting features are the substitution of Capital Stock for the old proprietorship. If the old partners take stock equal in par value to the value of the assets as shown by the books, the entries simply give their subscription in the ordinary way, as shown above, and then cancel the old proprietorship-claim for the new capital stock — the surrender of the property to the corporation. Supposing the old net assets are worth \$500,000, are on the books for that figure, and that John Doe and Richard Roe are the partners, who are to take stock of a par value of \$500,000, we get the following:

Subscriptions to Capital Stock	500,000	
To Capital Stock Subscribed		500,000
John Doe	250,000	
Richard Roe	250,000	
To Subscriptions to Capital Stock		500,000
Capital Stock Subscribed	500,000	
To Capital Stock		500,000

The second entry cancels the old credits to partners as proprietors, on the transfer of their rights as individual proprietors in payment of their subscriptions; and the explanation portions of the entries give the whole story of the transaction. If the old business is worth more than the value of the assets as shown by the books, because of the good will, the first task is to put the good will on the books and credit it to the old proprietors, and

then make the transfer as above. If the old books are not to be taken over, a clean sweep is made of the old accounts, showing that the old assets are withdrawn from the old business by the proprietors and the liabilities are assumed by them, thus closing all old accounts, and then the new books are started as if there had been no old business — debiting the assets, crediting the liabilities, and issuing capital stock for the difference, just as in the case of a corporation with no predecessor but assuming certain liabilities.

**Confusion between Profits and Assets.** Before we take up the distribution of profits in a corporation, we should realize that in common speech there is much confusion between profits and assets. We say, "The corporation has distributed its profits." This is perfectly clear and perfectly correct; but it leads to confusion of students of accounting unless they realize that what is really meant is that the corporation has distributed "assets equivalent to the amount of profits." One must take care not to confuse the assets with the profits, or the asset accounts with the profit accounts. Profit in the accounting sense is the amount by which assets have increased as a result of doing business, and hence it is the increase of proprietors' claim to assets: and this is complementary to the assets themselves. That is, profit from the accounting point of view, like everything else, has its double aspect — the asset which is gained, and the claim to that asset. The claim to the asset is not destroyed unless the asset is destroyed — though of course it may be transferred. The satisfaction of the claim to the asset, on the other hand, must lie in the surrender of the asset — through the payment of dividends, for example. So the account for profit does not represent the assets which were gained, but the ownership of what was gained; and the asset accounts represent all assets, including those which have been derived from gains, but give no hint of ownership.

**Distribution of Profits.** Since corporations have no accounts, on their general books, with individual stockholders, the sharing of profits among individuals cannot be shown on the general books. The individual stockholder, moreover, has no claim to the distribution of profits until such distribution has been voted

by the directors, and therefore he can have no credit individually for profits merely because they have been earned. When dividends are declared, a lump sum of profits is carried to a dividend account as a liability; and this is then paid to the individual stockholders, on the strength of the records of the stockholders' ledger, and is debited to the dividend account. It is common to establish a separate account on the ledger for each dividend declared, and to make a special bank deposit for the amount, and then to draw dividend checks on that bank account. The reconciliation of the bank statement will show the dividends unpaid. Before dividends are declared the profits are carried to a general account for profits, and then the amount to be paid in dividends is taken from this account and credited to Dividends, which is debited when the dividends are paid. Sometimes the dividend is less than the profit for the period, and sometimes more. It can seldom be exactly equal to the profit, for the figure of profit will seldom be exactly divisible by the number of shares of stock. Consequently an indivisible residue may accumulate and then be drawn upon. For more important reasons, however, the dividend is likely to be less than the profits: it is well to hold back a part of the profits for emergencies, or to increase the capital along with the growth of the business. The profits retained may be shown in any one or more of several accounts according to circumstances.

**Undivided Profits.** An account called "Undivided Profits" is sometimes used for small residues, when no permanent particular retention of them is contemplated. Sometimes this account is used as a pool, so to speak, into which are put the profits of the year before dividends are declared and in which is left any residue. When put to this use, dividends are declared out of this pool, and hence may be more or less than the profits of the year without this fact showing conspicuously. Suppose the undivided profits of the preceding year to be \$15,000, the profits of the year to be \$35,000, and the dividends declared to be \$40,000. The following entries will be made.

Loss and Gain

35,000

To Undivided Profits

35,000

(Undivided Profits now shows a credit of \$50,000)



Undivided Profits	40,000	
To Dividends		40,000
Dividends	40,000	
To Cash		40,000

At the end, Undivided Profits shows a balance of \$10,000, as it should, for the dividends have depleted the old balance by \$5,000 because they exceeded the profit of the year. If one wishes to emphasize the fact that dividends were paid in part out of profits of the past, it would be better to take dividends out of profits (as far as profits are adequate) before transferring profits to Undivided Profits, thus,

Loss and Gain	35,000	
Undivided Profits	5,000	
To Dividends		40,000

This method shows clearly on its face the relation between the profits and the dividends — as also between the undivided profits and the dividends. If the dividends had been only \$30,000, we should have had the following:

Loss and Gain	35,000	
To Dividends		30,000
Undivided Profits		5,000

This shows that not all profits were applied to dividends. Merely as a matter of emphasis, therefore, it seems desirable to transfer to Undivided Profits only the part of new profits not divided, rather than to transfer all profits and then take out the divided portion. To this account may be credited or charged corrections of profits or losses shown erroneously by the books in earlier periods, as is bound to happen from time to time with estimated figures, like the allowances for depreciation, for bad debts, and for discounts. This account is used also as a sort of reservoir for equalizing dividends. If earnings are rather irregular year by year but do not depart very seriously from the average over three- or four-year periods, in especially good years a part of the profits may be left in this account and in one of the recurrent lean years may be drawn for dividends. Sometimes the account is called simply "Profit and Loss." Always, of course, Undivided Profits repre-

sents a claim of stockholders to assets arising from gains, and does not itself represent any assets.

**Surplus.** If a part of the undivided profits are intended to be kept permanently, or for a long time, in the business as a general provision for safety, or for some special purpose, it is well to transfer the amount from Undivided Profits to a special account; for the very title "Undivided Profits" is a temptation to divide, and, as we have seen, the account is a sort of reservoir for drawing in lean years. Hence profits intended to be held and not distributed should be specially labeled, and the best way to label them is to put them into an account with a title that serves to indicate why the items are carried separately. The generic title for such accounts is Surplus; but there may be any number of surplus accounts, some with and some without the word "surplus" in their titles, and often there is a single Surplus. In the last case, the title usually indicates merely that the amounts carried to that account are not intended, at least at present, for dividends — though some corporations make no distinction between Undivided Profits and Surplus, but carry all balances of profit undistributed as Surplus.

**Special Surpluses.** So many special purposes may lead to the accumulation of profits that it is virtually impossible as well as undesirable to specify them here. Not many are likely to be in force in any one business at one time, however. Seldom will more than three or four be found in one corporation. Such things as acquisition of new properties, payment of debt, provision to meet extraordinary fire losses, provision for pensions of employees, are good illustrations. Sometimes the term "reserve" is used in preference to "surplus." "Surplus" emphasizes the fact that the net assets (above all debts) exceed the amount of capital stock; "reserve" emphasizes the fact that a part of the profits (or rarely original investment in excess of capital stock issued for it) have been reserved, from distribution as dividends, for the purpose indicated in the title of the reserve account; but they equally represent the ownership of net assets in excess of the par value of capital stock — provided assets are not overvalued. This last proviso, however, is of the utmost importance. Unfortunately many accountants use the term "reserve" not for a special sur-

plus, which represents excess of net assets over capital stock, but for a mere contra account representing overvaluation of assets, exactly akin to what we have previously called an "allowance." There is a world of difference between these two things. The distinction can well be pointed out by a simple balance sheet. Suppose we have

Assets	\$180,000	Liabilities	\$ 60,000
		Capital Stock	100,000
		Reserve for Depreciation	20,000
	<u>\$180,000</u>		<u>\$180,000</u>

If this reserve is a surplus specially labeled because accumulated as a safety-first precaution against the danger of a sudden displacement of machinery by new inventions, etc., it means that the assets are actually \$180,000, and as the liabilities are only \$60,000 and the capital stock only \$100,000 there is stockholders' ownership-claim to \$20,000 of assets more than the amount represented by the capital stock. If, on the other hand, this reserve represents "a hole in the assets," the property has already depreciated by \$20,000 below the figure shown on the books, and therefore no surplus exists. The account got its credit not from earnings, but in lieu of a credit to the account representing the asset which has depreciated. The title is misleading, and that is why we have used the term "allowance." Before attempting to use figures that include a "reserve," therefore, one should learn which sort of reserve is meant. One is the contra or complement of "assets which *must not be counted as available for general use*, because they will be needed to make up unreported overvaluation in other assets, and hence are reserved for that purpose — they will not help in future contingencies, *for the hole which they must fill has already been made*"; the other is the contra or complement of "assets which *are available for general use*, but will not be distributed as dividends, because they may be needed to fill future needs — but *if no unexpected future need arises they are clear gain*."

**Deficit.** When operations have resulted in losses, so that the assets, after all liabilities are paid, are insufficient to match the par of capital stock, the losses are commonly carried in an account



called "Deficit." This appears on the debit side of the balance sheet, though it is not an asset. It represents a reduction in proprietors' ownership-claims; but since such claims have already been given an artificial figure representing the par value of stock issued, we cannot now reduce the figure on the books and the balance sheet until the stock itself is cancelled, and a loss does not accomplish this result. So the deficit, not deductible on the credit side of the balance sheet, must be added on the debit side. Indeed, it is in one sense an asset: it is available to the managers for explaining what has become of the stockholders' property. They can legally settle their accountability to the stockholders as well by pointing to the deficit as by pointing to cash or merchandise — however unhappy such a showing may be. Often the deficit appears on the books as simply Profit and Loss. Since this title covers both losses and gains, one cannot tell whether gain or loss is involved until one observes on which side of the account the balance stands. Its presence on a balance sheet on the debit side less conspicuously advertises the fact of loss — and may sometimes for that reason mislead the uninformed stockholder.

**The Effect of Profits on Values.** In single proprietorships and partnerships it is obvious that profits increase the proprietors' ownership-claims. It is equally obvious that in a corporation the undivided profits, and surplus, do likewise. So far as the values shown on the books for assets are accurate, the intrinsic value (not taking account of the speculative future) of each share of stock is the capital stock, plus undivided profits and surpluses, divided by the number of shares of stock issued (or the capital stock, less deficit, divided by the number of shares); for all the net assets belong to all the stockholders. Profits, then, add to the value of stock, and losses depress the value. When a partner withdraws his profits, his balance is of course reduced. So when a corporation pays dividends, the value of its shares is reduced, for the profits previously appertaining to each share are thereby withdrawn. This is not only theoretically true but practically, for provision for dividends is accompanied on the market by a decline in the price of shares equivalent approximately to the amount of the dividend; and the degree of approximation depends upon the absence of psychological elements connected with the dividend

(such as the fear of a lower dividend next time). This decline in price occurs usually subsequent to the declaration of dividends and on the day on which transfers of stock between individuals cease for the period. A large corporation must have a period of time within which no transfer of stock will be recognized, of course, for it must know to whom dividends are to be paid, and it cannot safely make payment if constant changes and corrections are called for. Consequently for a certain period after every declaration of dividend the transfer books are closed for transfers. Persons buying stock before the transfer books are closed are entitled to receive the dividend, and persons buying afterward must wait for the next dividend, or, as it is called, buy "ex dividend." On the day when transfers close, therefore, the price drops. Sometimes, on the other hand, on the day on which a declaration of dividend is announced the stock may rise sharply; for the announcement of larger earnings than had been expected stimulates demand for the stock. The declaration of dividends cannot create value, but it may disclose value; and the announcement that dividends are to be paid may psychologically cause stocks to rise in value even when the amount of earnings was previously known, for, on the ground that a bird in the hand is worth two in the bush, some people had rather have their profits in cash than left in the hands of the company as additional capital. As a matter of fact, many psychological elements affect stock values, but none of them affect accounts until they enter into transactions. The market value of a stock is dependent on several things, chiefly the following: the soundness of its assets, as a basis for settlement with stockholders in case of dissolution; its current earnings, as a basis for dividends; the probability of future earnings, as a basis for future return on present investment; the attitude of the buying public toward this particular stock, as a basis for determining how readily the investment can be turned into cash in case of hasty need for ready money. Only the first two are matters that accounts can show. The third is a matter of judgment and prophecy. The last is largely psychological.

**Increase of Capital from Profits.** If assets derived from profits are distributed as dividends, and then the cash paid out as dividends is received back by the corporation from the stockholders



as investment covered by new stock issued, it is clear that the capital of the corporation has been increased over what it was before the profits were earned, for the profits are still in the business. It is equally clear that if the assets derived from profits had never been distributed at all, the condition would have been virtually the same: the earned assets would be in the business just the same, but there would have been no dividends, no cash handled, and no new capital stock; and so the dividends make no difference to any one if the amount received is immediately returned to the company as investment, and the capital stock though increased in amount for each stockholder represents no more assets than before and hence is worth no more in the larger amount than in the smaller. The increase in the number of shares reduces the value of each share. This does not mean that a share of stock is worth less than it was at the beginning of the earning period, but less than it was at the end of that period: if the shares issued exactly equal in par value the dividends paid and returned, the increase in assets (from profits) during the period is exactly matched by the increase in par value of shares issued, and the value per share is thus not affected; but before the dividend was declared the profits were covered by the ownership of old shares, adding just so much proportionately to the value of each, and hence the issue of new shares brings back the value of each share to what it was at the beginning of the period, and thus reduces it below what it was at the end of the period before the dividend was declared. In other words, in essential features the situation is the same as before the dividend was declared, but in nominal features it is changed, for dividends and new stock have appeared. Sometimes these nominal changes are worth while, for people are affected by purely nominal things. For a corporation to omit an expected dividend often has a depressing effect both upon its credit and upon the market value of its stock, even though the company is sounder and in a better position to earn profits by omitting the dividend. Business policy must often take into account purely psychological factors. On the balance sheet, however, the only effect of it all is a substitution of an addition to Capital Stock for the credit to Undivided Profits or Surplus that would have appeared if the dividend had not been declared.



**Stock Dividends.** In the paragraph above we assumed cash dividends returned to the company in the form of investment covered by new stock. The net result of it all was merely a substitution on the balance sheet of Capital Stock for Undivided Profits — for the other accounts concerned were both debited and credited for the same amount — Cash, and Dividends. If this is the net result of the transactions, it is obvious that a short cut may be taken — issuing the stock in place of the cash, and thereby avoiding the handling of cash and entries for it. This constitutes a stock dividend. A simple entry takes care of it:

Undivided Profits  
To Capital Stock

Or, if it is desired to show the dividend under its own title in a ledger account, the entries read

Undivided Profits  
To Stock Dividend #1

Stock Dividend #1  
To Capital Stock

As in the case above, however, this does not create new assets nor deplete old. It merely substitutes proprietors' ownership-claim in the form of new stock certificates for a claim to profits appertaining to the old certificates. The new issue, merely increasing the number of shares, depresses the value of the old; so that now perhaps 50,000 shares of stock cover \$5,000,000 of assets, whereas before 40,000 shares covered those assets, or a new value of \$100 a share succeeds an old value of \$125 a share, and now a man has five shares worth \$500 in place of his old four shares worth \$500. So far as it is easier to sell shares at par than above par, as psychologically sometimes it is, this is an advantage to the stockholder who may wish to change his investment, and is no loss to the company. This is exactly what happens, of course, when cash dividends are declared, as we saw above: but since stock dividends usually are declared not out of profits of the preceding period, as most commonly are cash dividends, but out of profits accumulated over several earning periods, they are likely to be much larger and the effect of the stock dividend on the market price of the stock is likely to be much greater.

**Stocks without Par Value.** As we have already seen, the significance of the par value on stock is slight; yet it is doubtless true that many subscribers or purchasers have thought some sanctity attached to the "one hundred dollars" appearing on the face of a stock certificate, and have been led to pay more or sell for less than otherwise. In some States the inability to sell stock at a discount has led to awkwardness, to misunderstanding, and even to temptation. One device recently adopted in the hope of eliminating these difficulties is the issue of stock certificates without par value. These, of course, certify merely that the owner of the certificate is a part owner in the enterprise, and is entitled to a certain proportion of its declared dividends and in case of dissolution to a certain proportion of its net assets. Since no named value is attached to the certificate, no discount or premium is recognizable, for there is nothing with which to compare the amount invested in the company and covered by the certificate. In other words, the company may issue shares at whatever it can induce people to invest upon them, but of course it must take every precaution that all persons shall make the same investment for the same number of shares — except so far as conditions have changed between the times of investment. The entry for issue of shares by companies issuing only shares without par value is conveniently

Assets (cash or what-not)  
To Invested Capital

and the amount should be the actual value of the property invested. It is preferable not to use the term Capital Stock, for this should be confined to the books of businesses having stock with a par value (simply to avoid confusion). From this point on, the accounting for stocks with no par value is virtually identical with that for par-value stocks except for items which hinge upon a par value. Surplus is excess of net assets above investment rather than above par of capital stock, and Deficit is the measure of the failure of net assets to meet investment. Premium Surplus and Discount on Stock then cannot be, for there is no such thing as premium and discount on stock in such corporations. If, however, the corporation issues one kind of stock with par value, say preferred, and another without, it will necessa-

rily have an account for capital stock, and then to credit Invested Capital for the amount invested on stock without par value would be misleading, for it would suggest that the total invested capital was covered by it. In this case the term "stock" had best be kept, and the credit at issue may well be to "Stock of No-Par Value."

**Bonds.** One type of obligation issued by corporations and not usually by private proprietorships is bonds. These are virtually only promissory notes running for a long term, but they commonly have mortgage features attached. Since often they run for many years before maturity, it is natural that they should be issued by corporations which have a long or perpetual charter. The accounting principles involved in both bond issue and bond holding will be discussed in Chapter XX.

### QUESTIONS AND PROBLEMS

1. Show the entries for the following transactions:

- (a) \$50,000 of capital stock is subscribed for in two installments, 60% and 40% respectively.
- (b) \$30,000 of stock subscriptions are paid in cash.
- (c) \$40,000 more of capital stock is subscribed for at par.
- (d) \$60,000 in cash is paid on stock subscriptions.
- (e) Stockholders donate to the corporation \$15,000 of stock of the corporation.
- (f) The donated stock is sold at 80.

Show the balance sheet at the end.

2. A corporation is authorized to issue \$50,000 of new stock.

\$30,000 of stock is subscribed for in three installments of \$10,000.

An additional \$20,000 of stock is subscribed for.

Installments #1, #2, #3 are paid, #1 and #3 in cash, #2 in services.

The last subscriptions are paid in cash.

The stock is issued when paid for in full.

Stock of par value of \$10,000 is returned to the corporation as a gift.

It is then sold for \$11,000.

Show entries for these transactions, with the balance sheet at the end.

3. A corporation is organized to take over and expand an old business.

It receives from the incorporators subscriptions for \$10,000 of stock at par, collects the cash, and issues the stock.

It then buys the old business, of which the balance sheet is shown below.

Plant, etc.	\$50,000	Proprietor A	\$33,000
Accounts Receivable	18,000	Proprietor B	33,000
Merchandise	16,000	Accounts Payable	18,000
	<u>\$84,000</u>		<u>\$84,000</u>



It finds that the assets are worth the figure at which they stand on the resource side of the balance sheet. It takes over the business, including both assets and liabilities, and gives the old proprietors for their interests stock in the corporation having a par value of \$84,000.

The new corporation now receives subscriptions for \$100,000 par of stock at 110 in two equal installments, and collects the first installment.

All these transactions occur on the same day, by prearrangement, and after them at a meeting of the directors the treasurer submits a balance sheet as follows:

Plant, etc.	\$68,000	Capital Stock	\$204,000
Accounts Receivable	73,000	Accounts Payable	18,000
Merchandise	16,000		
Cash	65,000		
	<u>\$222,000</u>		<u>\$222,000</u>

- (a) If you accept the treasurer's figures, explain them by showing the journal entries that gave rise to them. If you do not accept them, show your own balance sheet and the entries that established it.
  - (b) Now imagine yourself to be in charge of the books of the old firm, and show journal entries for finally closing them, supposing A and B to be equal partners in all respects.
4. A corporation is authorized to issue \$300,000 of preferred stock and 3,000 shares of common stock of no par value.

The preferred stock is subscribed for at \$360,000, payable in three equal installments.

Two thousand shares of common stock are subscribed for at \$50 a share.

Installment #1 is paid in cash. One thousand shares of common stock are subscribed for at \$50.

Installment #2 is paid in cash. The common shares are paid for in cash and are issued.

Installment #3 is paid in cash. The preferred stock is issued.

Show in journal form the necessary entries.

5. A corporation has stock issued as follows: 1st preferred, \$1,000,000 [par value \$100]; 2d preferred, \$500,000 [par value \$50]; common, 5,000 shares [no par value]. The dividends called for by the 1st preferred shares are 3½% semi-annually, and by the 2d preferred shares 3% semi-annually. The earnings available for dividends for a half-year are \$105,000. The regular dividends are declared on 1st and 2d preferred shares. Out of the balance of earnings a dividend of \$1.50 per share is declared on the common stock, and the remainder of the earnings is added to surplus. Out of the surplus a stock dividend of one share of 2d preferred stock is declared to each holder of one share of common stock. The cash dividends are paid, and the stock dividend is issued.

- Show journal entries for all transactions connected with the declaration and payment of dividends and the issue of the new preferred stock.
6. A solvent corporation has voted to dissolve. Its assets have been sold and its liabilities satisfied. The balance sheet shows only cash and the claims of the stockholders.

Cash	\$1,244,000	1st Preferred Stock	\$100,000
		2d Preferred Stock	750,000
		Common Stock	250,000
		Surplus	4,000
		Premium Surplus	140,000
	<u>\$1,244,000</u>		<u>\$1,244,000</u>

The preferred stock has a par of \$100, but the common stock, 5,000 shares, has no par value. By the agreement for dissolution, holders of first preferred stock are to receive \$115 a share, and holders of second preferred are to receive \$109 a share. The expenses of dissolution are \$11,500.

Show in journal form the entries for dissolution and for closing the books.

At the middle of the manufacturing season it is found that only enough goods can be finished and converted into cash to pay, with the cash now on hand, wages and current items until the end of the season; yet replacement of worn-out equipment is needed. In this strait, one of the partners suggests removing the pledge of inviolability from the surplus and using that to pay for replacement. How far is this suggestion feasible if the other partners agree?

## CHAPTER XVII

### WHERE DO PROFITS BEGIN?

**What are Costs?** It is common to read of some farmer who at a restaurant makes criticism of the high prices and tells of the margin of profit; for he knows what he as a producer receives for the product served in the restaurant. One may criticize such criticism and yet not go far in defense of the restaurateur. Very few people are competent to determine profits, for few are competent to determine where profits begin. The difficulty is in finding what is not profits. It is easy to say that profits consist of all the return in excess of costs; but this leaves us to find what we mean by costs. We shall later discuss briefly the methods of finding the costs of specific articles, but here we are concerned with the general question of what we mean by costs. Does cost mean what we have actually put into the product, or what we should have to spend now in order to be back where we were before we made or bought the product? Does it include things that were not incurred for this product but for something else, yet of which this product got the benefit, even though the cost or consumption of the things would have been just as great if this product had never been made?

**Vagueness of "Cost."** The word "cost," like many other economic and accounting terms, has several meanings, and we cannot go far in a study of costs without something approaching a definition. The term is used sometimes for loss, sometimes for what is given up out of what one has, and sometimes for that of which one gives up a possibility though one never gave up the thing itself (because one never had it to give up). Economists say, for example, that economic rent does not enter into the cost of production, for such rent is paid for the use of a superior productive agent, and one gets back in extra production what one pays in rent; so that the rent really costs nothing — the extra return is equal to the extra payment, like the exchange of a five-dollar bill for five one-dollar bills. This is a perfectly good use of the word "cost"; and if rent is not cost because the outlay



comes back in the product, what the economists are really talking about in this case is "cost as unreturned outlay"; but this clearly is not cost in the accounting sense; for we have already seen from our study of the operating statement that we should lose much necessary statistical information if we allowed outgo and income to be cancelled against each other without record of each separately. Everybody says that wages paid are a cost of doing business — for cash is given up in getting the new things; and this is an accounting sense of "cost," which we may call "cost as outlay." Economists say that if we use our capital in our own business the interest that we might have received on it by lending it is a cost of conducting our own business. This we may call "cost as abstinence." Much difference of opinion is found among accountants about this sort of cost, but it is due to different points of view with respect to the meaning, or the desirable meaning, of "cost" and "profits." With the first of the meanings of cost, cost as unreturned outlay, we have here nothing to do; for though it is true that economic rent is not a cost in the sense in which the term is used in that connection, it is a cost in the second sense, "cost as outlay," which we are now about to examine. The third sense, "cost as abstinence," we shall examine later, in connection with the finding of costs for specific articles of product.

**Independence of Cost and Selling Price.** The first step in an understanding of profits is a realization of the independence of cost and selling price. It is true that in the long run selling price must equal cost plus a margin of profit, else goods will not be produced and sold, and services will not be rendered. It is also true that selling price will affect costs in some instances, for the price does sometimes affect efficiency, leading to greater economy when the price is low and greater carelessness when the price is high. With these exceptions, however, cost and price are for any particular business man at a particular time determined by independent transactions with unrelated elements of business society. The fact that a selling price is so high that the product "can stand" heavy costs, and that other prices are so low that other products "cannot stand" heavy costs, has nothing to do with the facts of cost. Cost has to do with the hard facts of reality in producing

goods and rendering services, and comes from dealing with certain groups of people and circumstances, and usually it has nothing to do with what is to be received for the goods or services after they have been produced or rendered, in dealing with other groups of people and circumstances. Accounting has to do with the truth, the whole truth, and nothing but the truth; and it must not be affected by one's wishes, or prejudices, or notions of how things would have been if they had been different. The problem of accounting is to show how things actually are. Many times it is difficult to know how things are, for circumstances are so complex, and data are so inadequate, that the conditions defy complete analysis — as often, for illustration, with the actual amount of depreciation on a building; but the best available knowledge of costs should always be utilized independently of extraneous circumstances. It is the height of accounting misrepresentation to charge one thing more than another for costs merely because it chances to have a higher selling price: the purpose of accounting is in part to show the difference between cost and selling price, and if we allow the selling price arbitrarily to affect the figuring of costs we are destroying in that process the possibility of doing well one of the very things we set out to do.

**Independence of Cost and Replacement.** The second principle necessary to an understanding of profits is that cost has nothing to do with circumstances unrelated to the particular business and particular transactions concerned. If I pay \$5,000 for a bit of property and sell it for \$7,000 without incidental costs, my profit is \$2,000; and the fact that I later buy another bit of property, like that sold, for \$4,000, does not affect my profit. It is true that I now have \$3,000 more cash than after I bought the first property (\$7,000 selling price less \$4,000 paid for the new article); but of this \$3,000, \$2,000 is profit on the first article and \$1,000 is original capital returned to me from the sale and now set free by the fact that I can buy a new article \$1,000 cheaper than the old. Similarly, if a new article should cost \$6,000, my profits on the old, bought at \$5,000 and sold at \$7,000, would not be thereby reduced to \$1,000: the fact would be simply that to continue in business of that sort I should require more capital. A less simple case, however, is worth further study. Suppose we buy equip-

ment worth \$10,000 that will serve for 10 years, producing 1,000 articles a year. We may say, then, that each article produced should be charged one dollar for its share of the depreciation of the equipment. If the product sells for a price (including a reasonable profit) that will cover this one dollar charge along with the other costs, the business has recouped itself for the outlay in this particular. This is still true even if the cost of new equipment, which this business did not then need to buy, suddenly rose a year after the old was bought to \$15,000; for the \$10,000 actually invested is restored. The purchase of new equipment for \$15,000 after the old is worn out cannot affect costs of nine years ago or of nine days ago. The two sets of equipment have themselves independent costs, and the cost of the product of one has nothing to do with the cost of the product of the other. When confusion arises in this particular, the cause is found usually in a failure sufficiently to separate cost and selling price, as suggested in the preceding paragraph. When we come to the question of the justice of charges to the customers, we step into a new field — a field, moreover, with which in a sense the accountant as such has nothing to do; but since, unfortunately, many persons have confused the two fields, it is well to observe the second here. As soon as the market price of equipment rises, the customer is getting the product of a higher-priced means of production, and, since we usually consider that one should pay for what one is getting, he should pay for the product of the now high-priced equipment. It is true that since the producer's cost has not risen, this gives the producer more profit; and this looks like exploiting the customer. The results of the chances of business, however, belong to those who take the risks — gain when things are favorable, loss when they go wrong. If the market price of equipment had gone down, what would the customer expect? He would expect, would indeed demand if he had any means of enforcement, that prices be lowered. Then the producer who had bought his equipment at the old high level of prices would suffer loss. If he is to suffer the loss when prices go down, he must be allowed to reap the gain when prices go up. It should be noted here that under these conditions the margin of profit will be large to the man who bought his equipment at the old price just before the



price went up, for he will have a long term of reaping large profits; but he will lose that again if he chances to renew his equipment at high prices just before they fall again. There is, then, no question of justice involved in the exclusion of replacement from costs; for if the customer ought to pay for replacement, that is a matter of selling price only: cost is a matter of historical fact with which <sup>non profits</sup> neither selling price nor replacement has anything to do.

**Cost as Outlay.** It is clear that cost is concerned with the acquisition of property or services, for when we speak of costs we have in mind something acquired — either property acquired, or services rendered to us or on our behalf to some one else; but the measure of cost is always the complement of the thing acquired — namely, the thing given. It is clear from the preceding discussion, too, that cost is a matter of past or present, not of the future. Except, of course, when the transaction is inextricably a part of a large whole, such as the ten-year life of the machine mentioned above, cost has nothing to do with the future of the property or service acquired, with either its disposition or its replacement. The common errors in determining costs lie in three directions: forgetting the simple facts just stated, neglecting to see all the value given, failing to observe just what was got for what was given. If one acquires property by simple exchange, the cost is obvious. If I give five dollars to a book agent for a book that he brings to my house, the cost of the book is obviously five dollars. As we have seen, however, a large part of business consists of something else than simple exchange. Conversion of assets is involved — for even simple sales usually involve salesmen and other selling expenses, and the assets which pay for the contributory things thereby become converted into the ultimate thing got. If, for example, I buy a factory site for five thousand dollars, the actual cost of the lot may be much more; for I may have paid a surveyor twenty dollars for a survey, a lawyer a hundred dollars for passing upon the title and the deed, and the Register of Deeds two dollars for registry, and stamp taxes may amount to several dollars, and traveling expenses and postage and telephone calls in connection with the completion of the purchase may amount to many dollars, to say nothing of the pay of clerks copying documents, etc. Some of these things, it should be remarked, have

nothing to do with the actual value of the lot: they are incidental to my purchase of the lot, and the lot would probably be worth just as much if I had never heard of its existence; but for my possession of the lot they are costs. This has been expressed briefly in bookkeeping form in Chapter VII through Converted Assets, which was debited for all the costs going into the goods sold. The credit side of this account, of course, has nothing to do with costs. The debits are typical of costs, and from them we may develop our principle. They included the following typical items: wages and rent, for cash payment for services which, though they brought their equivalent in value, did not appear on the ledger under the title of the actual asset obtained from them; reductions in value, like fuel consumption and expiration of insurance prepaid; and royalties, for royalty liability incurred. In other words, all of them involved some type of disappearance of value — entire disappearance of value, partial disappearance of value, or the setting up of a liability (which is the same thing as a disappearance of value, for value will disappear in meeting it). This, indeed, is what we mean, in the accounting sense, by cost — disappearance of value in the acquisition of other value. Sometimes the disappearance is due to mere exchange of values, and sometimes to conversion of values. The books show what values have disappeared, and what values have appeared; but only the former are costs — they are the costs of obtaining the latter. Yet if we are careless in showing the values that have appeared, the yield from the costs, we shall have misrepresented that to which the costs apply, and our conclusion will err as badly as if the costs themselves had been misrepresented.

**Finding the Costs.** The disappearances of value which constitute cost are much more numerous and much less obvious than the uninitiated are likely to suspect, and sometimes finding the relation between the returns from costs and the costs which produced the returns is so difficult that long experience is essential to successful cost accounting. For this reason no attempt will be made here to discuss the matter fully. Such discussion of method as is feasible in this book is given in Chapter XXII. It is worth while here, however, to note at least one illustration of the variety of elements entering into the cost of a simple article, thus getting a



hint of the reason why finding costs is not a matter of hasty observation — usually because many of the costs are not visibly connected with the final product. Let us revert to our illustration at the beginning of this chapter, food served at a restaurant. The obvious things of which the farmer was doubtless thinking were the cost of the raw food, the fuel for cooking it, and the wages of cooks. Let us add a few only of the other items (for the complete list would cover several pages of text and sadly bore the reader). Connected with the raw food, we find the cost of buying (including clerical help, postage, and stationery), freight and cartage, receiving and sampling and checking the goods with the invoices, doing the bookkeeping for purchases, correspondence regarding purchases and payment, storing, refrigeration, loss by spoilage of food ready for *à la carte* service but not demanded, insurance on goods in storage, rent and light and care of storerooms, and selecting required foods from the storeroom for use. Connected with the preparation of food we may have purchase, storage, and handling of fuel; insurance, taxes, and depreciation of cooking ranges and utensils; rent, light, and heat of kitchens; spoilage, waste, and petty thieving; cleaning of utensils and care of kitchen. Connected with the serving room we have almost all the costs of the kitchen repeated. Connected with the dining room we may have not only waiters' but checkers' and cashiers' wages; insurance, taxes, and depreciation of table linen, of china, of silver, of glass, and of furniture; rent, often very high, light in abundance, heat; printing of menus; floral and other decorations. To find how much of all these costs, together with those not named above, is chargeable to a plate of toast and how much to a broiled chicken is a problem beyond the scope of bookkeeping. To solve it exactly we should have to determine how much of each of these costs contributed to the toast as served and how much of each to the chicken as served.

**Division of Costs between Periods.** The difficulty of attaching costs, even after they have been found in total, to particular parts of product (as we did by the cost-accounting method of Chapter VI but could not do by the inventory method of Chapter VII) is found sometimes to apply to a division of costs between periods. Suppose, for example, that a machine costing \$10,000 is



judged good for ten years' use, and that its loss of value at that time will be due to wear. Suppose, too, to make our illustration simple, that the estimate of ten years' life is correct. Suppose, lastly, that the product of the machine is 10,000 articles in the first year, 14,000 in the second, and 12,000 in each of the remaining years. What should be the charge to the product of each year for depreciation of the machine? A charge of one-tenth the total, or \$1,000 per year, is easily made to Converted Assets, or Loss and Gain, with a credit to Machinery. This when statistically applied to the product of each year gives a unit cost for depreciation of 10¢ ( $\$1,000 \div 10,000$ ) for the first year, 7.14¢ for the second, and 8 $\frac{1}{3}$ ¢ for each of the others. Is this correct? Is there any actual difference in cost between the depreciation chargeable to articles which happen to be made in the second year and that chargeable to those made in the third? We have assumed here depreciation at a constant rate, though we might have assumed, as some accountants do, that the machine depreciates slowly at first and then rapidly. Even assuming a constant rate, should the rate be applied to periods of time or to articles of product? If the depreciation is due to wear, it is clearly assignable to product rather than to time, and all articles produced in the ten years should be charged alike. Our 120,000 articles wearing out \$10,000 worth of machinery should be charged 8 $\frac{1}{3}$ ¢ each, therefore, in whatever year they are produced. Difficulty at once arises here, however, when we observe that we found this rate by knowing the product for the whole ten years; but we can't wait ten years to find our profits (and hence our costs) for the first year. In practice, therefore, we must either (1) use the arbitrary ten years and take one-tenth each year, or (2) estimate our product for the whole ten years, calculate the cost per unit of product, and apply that to the product of each year in turn — adjusting our estimate as experience corrects it. The former is simple, works out without discrepancy at the end, and is fairly accurate when the product is fairly uniform year by year and the estimate of the life of the machine is fairly accurate. The latter is more accurate if the estimates are fairly accurate, but (hinging upon two estimates to the other's one) is less accurate if the estimates are farther from the facts than the facts are from uniformity. Both methods

show that costs are not always exactly ascertainable; for though the future cannot alter the facts of the past, some things must be taken over large wholes and the share which the past has in those wholes cannot be known until the wholes are known. They both suggest the desirability of a reservation of supposed profits as a sort of buffer to take the shock of discovery that certain costs and profits have been miscalculated and that certain assets supposed to be good have shrunk below the book values (as when machinery has been depreciated 75% and discovery is made that 90% is none too much).

**Cost and Inventories — Merchandise.** One of the commonest tasks in connection with dividing costs and profits between periods is that of finding gross profits on merchandise. In many mercantile businesses it is not thought worth while to attach the cost of every article sold to its selling price; and therefore gross profits cannot be found by the cost-accounting method of Chapter VI, but must be found by the inventory method of Chapter VII. The danger of error lies in the method of taking inventory. The purpose of taking inventory is in this connection to learn what has not been sold, in order that we may learn the cost of what has been sold (that is, the disappearance of value through sales, in acquiring the selling price). It is obvious that an exaggeration of the inventory of what has not been sold (which is subtracted from the total goods handled) reduces the apparent cost of what has been sold, and so exaggerates profits. Optimism creates a strong temptation to exaggerate inventory, for it tends to think the goods worth more than they are. A little thought makes clear that the inventory should never be higher than cost however the market price may have risen, for the goods have not been sold and hence cannot yet have yielded a profit — even though they may do so in the next period. No profit is ever made on anything while it is held: the profit is only imaginary (so-called “paper profit”) until the article has been exchanged for something else of higher value: then the conversion or exchange has actually taken place and the profit is real. Since profit is made only on what is sold, the inventory consisting of what has not been sold cannot include any profit. Yet, though we usually designate as poor a rule that won’t work both ways, virtually all accountants are

agreed that inventories of merchandise should be taken at lower than cost if the market price has fallen since purchase. The grounds for this and the conditions under which it is true require examination.

**Inventories at Less than Cost.** Hope springs eternal in the human breast: a prospect of profit has led to many an extravagance (both personal expenditure and capital investment) that unrealized profit could not pay for, and to many a bankruptcy. One should not only not count the chickens before they are hatched, but should not assume that all will live, will all be hen chickens, and will all lay eggs. Sensible conservatism is in most cases sufficient reason for taking inventories at less than cost when the market price has fallen. Another reason often appears, moreover. Goods are usually bought for early sale (certainly the tendency of modern economy in mercantile businesses is to buy little and often rather than much and seldom). Goods on hand at the end of an earning period consist then of two sorts: those intended for sale in the last period and left over; and those bought for future sale. We are here faced with two contradictory desires. We desire to show costs on our books, but we desire also not to overstate profits — we desire not to exaggerate profits for this period even if the exaggeration will be corrected in the next period, for misunderstanding or changes of ownership in the meantime may cause injury or injustice. If we carry our inventory at cost, above the present market price at which we could now buy, we have neglected the fact that goods bought to be sold in the last period have shrunk in value and that the new period should not be asked to take over by inheritance goods with a handicap attached. Since our purpose is to determine the division of ultimate profit and loss between periods, we should put each period on its own feet. The shrinkage in value of the left-over stock is a cost of the vain attempt to sell it and is chargeable to the period in which it was meant to be sold, and surely should not be thrust into a new period which would be handicapped by it. The new period should be given credit, on the other hand, for any profit that it may make on the left-overs of the period before, and that profit is the difference between the price at which it inherits fairly and its selling price (less selling costs). Stock purchased



for sale in the new period, on the other hand, is chargeable to the new period, and hence if our accounts are to show the historical facts, the amount carried to the new year should be cost. Then the difference between the actual cost and the actual selling price (less selling costs) will be shown on the accounts of the new period, where in reality it belongs. As a matter of fact, however, in practice this division of inventory into items bought for past sale and items bought for future sale is not made, but for the sake of conservatism all are usually carried at "cost or market, whichever is lower." By cost, of course, we mean cost after all discounts available have been subtracted, whether they were actually taken or not, for we have observed that a lost discount is not a part of the cost of goods but a payment for extended use of other people's money.

**Inventories of Raw Material.** The considerations of the last paragraph have much weight when applied to the raw materials of manufacture. If market prices have fallen and we take the inventory at the reduced prices, the loss falls on the year when the prices declined, and the amount charged to the product of the later year when the material is consumed in manufacturing will be less than the material actually cost. In other words, the actual cost of the goods manufactured from these raw materials will be understated because a part of that cost was absorbed before the material was used. Is that desirable? Do we wish our cost accounts to show what our product actually cost, or what it might have cost if we had bought materials differently? If we are to show actual cost, we must carry the inventory to the balance sheet (and therefore to the new period) at cost, even though that overvalues (in respect to present market price) some of our property. As we shall see in the following chapters, however, the balance sheet is at best a poor indicator of market values, and it is of doubtful advantage to sacrifice the cost figures, that we can perfectly well keep, for the attempt to show market figures that we cannot ever show well. It is therefore wise to carry raw material bought distinctly for future use at cost, so that it may get into the accounts at cost for the period for which it was purchased, and reduce the inventory of raw material in case of a decline in the market only when such material has been left over from over-

stocking — in which case, of course, the new period should not be made to suffer the cost of the error.

**Profit on Contracts.** Often uncertainty arises as to profits on contracts partly completed. In general, contracts affecting something to be done may be divided into two classes: (1) those in which the profit arises out of superior knowledge or luck applied to purchase and sale, as when I agree to sell, at a price higher than I shall have to pay for it, something that I shall have to buy from a third party, and I thus make the other party to my contract pay me for my knowledge (which may be also an advantage to him, for otherwise he might pay even more than he will pay me); and (2) those in which superior knowledge is applied to the performance of certain work, as in construction, and the profit lies in the skill with which the work is done or in the good luck which accompanies the accomplishment of the task. In the first case the profit is earned at the signing of the contract if the second party to the contract accepts the third party to the transaction as the party now responsible for the fulfillment of the contract; and in this case the profit will be taken on the books at the time of the acceptance of the third party, for the profit is not even contingent. In the other sort of case, however, the profit is not earned until the work is done; for fire, strikes, transportation delays, political disorders, unexpected handicaps like bad weather or quicksands in construction work, may almost at the last moment make profit impossible and turn into loss what looked like a safe margin of difference between cost and selling price. The moral is to wait: to treat costs on such contracts as assets, for they contribute just so much (provided there has been no waste) toward the fulfillment of the contract (but of course not in excess of a share of the total contract price equivalent to the estimated portion of the work done). Any balance is a contingent item not yet known as either profit or loss. If dissolution of partnership occurs while such things are pending, the retiring partner may of course be given his share of the contingent profits after he has given a bond to return the amount in case the apparent profits prove unreal; but more satisfactory is an agreement that he will be given further distribution of profits in case probable profits on the work already done prove real.



**Capital Losses as Costs.** Akin to, indeed virtually a part of, the division of costs between periods is the accounting treatment of so-called losses of capital. Capital is any wealth devoted to production, whether cash necessary for current payments or assets of a decidedly long-enduring type, like buildings and machinery. It is common, however, to speak of assets of the long-enduring type as capital assets, for they are expected not to be exhausted in one use, like raw material, supplies, postage, and other current items, but to form part of the enduring capital of the business. Capital is supposed to be consumed in operations, and we have defined cost as disappearance of assets in the acquisition of other assets; but sometimes assets disappear not normally but extraordinarily. Suppose a shipping company operates a fleet of twenty vessels over regularly established routes, and early in a financial year loses a vessel before it has had any earnings. If the loss on the vessel wrecked (value less insurance recovered) exceeds the net earnings of the other nineteen vessels for the year, has the company made a profit or suffered a loss? The question might also be put in this form: must conversions keep capital intact (supposing none withdrawn) before profit can begin? As we have already seen, a cost is never merely a cost: it is the cost of something. Is the disappearance of a part of the value of this vessel a cost of the earnings of the fleet for this period? If so, the year shows a loss. This is surely so if the loss of one such vessel a year is an expected incident of operations — if the loss of one vessel a year is normal on the average. If not, this loss is incidental not to a single year but to several, and should be treated as a cost of several years' earnings. To provide for such contingencies, something should be set aside every year when losses do not occur for the restoration of capital in the years when they do occur. It should be noted, too, that if these losses are natural to the business, as they are in the shipping business, for insurance to full value is not usually possible, a fair proportion of such losses is chargeable to every year (whether losses actually occur in that year or not) as a cost, and hence is deducted from earnings before profits are found. Profits have not been made unless the gross earnings cover such provision along with the other costs. An entry debiting Insurance Charges and crediting



Provision for Maritime Hazard, as described in Chapter VIII, gives assurance that this fact is not forgotten. It indicates that a part of the assets will probably disappear later as this year's share of normal capital losses. This is unlike the reserve recommended on page 266: that is a part of what is believed to be profits, but may prove not to be profits; this is believed to be a necessary deduction from earnings, and hence not to be profits, but may prove to be unnecessary or larger than necessary and hence to be profits after all. If, on the other hand, no provision has been made in the past for capital losses, when they occur the portion not belonging to the current year as a normal operating cost must be taken out of surplus, entered as a deficit, charged directly to partners, or carried as a deferred asset. The only defense for the last is in case the loss occurs so early that no opportunity has been given for providing for such losses, and it is presumable, on the law of averages, that the near future will escape them; so that this is a cost borne now for the future. In case a deficit is shown, it is well to call it Capital Deficit, to distinguish it from any accumulated deficit arising from normal operations. It can be wiped out by later credits to Provision for Maritime Losses transferred to Capital Deficit. If the loss occurs after sufficient provision for maritime losses has been made, an entry debiting Provision for Maritime Losses and crediting the steamship account or an allowance account is all that is necessary.

**Statement of Surplus.** We have now seen that a complete story of a business may require not two but three statements. The operating statement (or income sheet) shows the business of the period as it is chargeable and creditable to the period, but it does not show items that, though they occurred in the period, belong properly to other periods. The balance sheet shows the effect of both sets of items, but cannot distinguish between them. So a third statement is often desirable to show what changes have taken place in surplus during the last period. Additions may have been made to surplus from extraordinary kinds of gain, such as refunds of taxes levied in earlier periods under erroneous interpretations of law, and collections of debt written off in previous periods as uncollectible; and numerous deductions may be made,

as for an excessive amount of debt of earlier periods proved uncollectible, and discovery of insufficient provision for depreciation in earlier periods. If such facts are not reported to owners, they may well complain that they are not kept informed of all they should know.

**Capital Gains.** Akin to capital losses discussed above, but opposite in nature, are capital gains. Where trusts are involved faulty accounting for them sometimes leads to great injustice. Suppose a building is owned by an estate of which the income is to be received by one beneficiary and the principal or capital is to be kept intact for another for use after the death of the life-beneficiary; if now, because of changes in real-estate conditions, the building is sold for a larger sum than its previous value, is the gain a gain of capital or of income? Supposing this gain has come not from real-estate operations conducted by the trustee as a regular part of his management of the estate, but from peculiar circumstances independent of normal operations, it has come as an increase in the capital of the estate, not as income of any particular year or of any series of years (unless, indeed, the property was secured in the first instance for the purpose of catching the growth in real-estate values, in which case a new set of accounting considerations, involving a good deal of mathematics, becomes involved). Such gain of capital should be credited to Capital Surplus, so that it shall not become confused with accumulated general surplus, or undivided profits, and suffer distribution as regular dividends, misleading the stockholders as to the earnings of their property, and possibly giving to a life-beneficiary property that should be held as capital to earn income later for both life-beneficiary and remainder-beneficiary.

**Special Gains.** Occasionally gains akin to capital gains just discussed are made, and yet they are current rather than capital gains. If a business finds in the dull season that it has surplus cash which it will need in the active season, it may temporarily invest that cash in stocks and bonds so that it may be earning an income. If in addition to the interest and dividends earned it finally sells those stocks and bonds at a profit, or makes several changes of investment that yield a profit, that profit is profit of the period. For convenience, in order not to confuse the stock

and bond accounts with earning accounts, it may well credit the former, when securities are sold, for the cost as originally debited, and enter any losses or gains to Stock and Bond Sales. Then the stock and bond accounts would be pure asset accounts.

**Income Taxes.** Theoretically, income taxes are not costs, for they constitute a sharing of profits with the government, and profits do not begin until all costs have been met. In a sense, the term "income tax" is a contradiction in terms, for if the tax is taken out of so-called income, the so-called income is not actual income; and so no tax can be in reality an income tax. The so-called income tax, properly speaking, is a tax based upon what income would be if no income tax were payable. To the payer, the tax is a cost, for his actual profits do not begin until after his tax has been met. For convenience in showing the basis of the tax, on financial statements the tax is commonly not included in costs but is subtracted from what otherwise would be profits.

**Summary.** We have observed that costs in an accounting point of view are disappearances of value in the acquisition of other values; that they may constitute mere exchanges of value, or conversions of value; that they may be chargeable to one earning period or to many; that just what are the disappearances of value for any particular period is not always easy to determine; that against what returns or yield converted costs are chargeable is not always easy to determine; that gain consists of return less cost and it may belong to a particular earning period or periods, or to no particular periods, in which latter case it is a gain of capital. A more detailed study of disappearances of value is made in Chapter XVIII in connection with depreciation.

## QUESTIONS AND PROBLEMS

1. During the construction of a building you find necessary the services of a night watchman to protect it from vandals and thieves of building materials, and insurance against fire. Are the watchman's wages a cost of the building and chargeable to Real Estate, or are they operating expenses? Is the same thing true of the insurance premium?



2. A trial balance on December 31, 1920, was as follows:

Capital Stock		123,600
Bonds Issued		24,000
Stock of Affiliated Companies	50,000	
Accounts Payable		22,000
Accounts Receivable	86,000	
Purchases	84,000	
Inventory, 1/1/20	27,000	
Interest	500	
Taxes	1,500	
Insurance	600	
Wages	7,000	
Sales		107,000
Office Expenses	8,000	
Advertising	18,000	
Loss from Bad Debts	1,000	
Income from Investments		6,000
Cash	6,400	
Surplus		7,400
	<u>290,000</u>	<u>290,000</u>

The inventory of merchandise on December 31 at cost is \$40,000; the market value of the inventory is \$37,000. The advertising is not now continuing, but there has been no apparent decline in sales since it was discontinued. Of the sales, \$7,000 are for goods sent on approval, and not yet accepted. Of the wages, \$500 have been incurred in the sale of goods returned. Insurance to the amount of \$300 has expired, and interest has accrued against the company to the amount of \$100. Of the cash, \$1,400, which was received on sales made in Canada, is in a Canadian bank, and is worth in this country, because of extraordinary exchange conditions, only \$1,200. During the year \$2,000 of accounts receivable have been written off, of which \$1,000 is for sales made in 1919.

Show an operating statement, and the surplus account, for the year 1920. Show also the final balance sheet.

3. A plant which at the beginning of a fiscal year has been depreciated to \$400,000 produces a product during the year at a cost, exclusive of depreciation, of \$200,000. The estimated depreciation for the year is \$40,000. At the end of the year, however, the plant is sold for \$380,000. Should depreciation of \$40,000 be charged as a cost of the product? Of \$20,000? Explain why you answer as you do, and state the cost of the product.
4. Find the operating costs for the fiscal period and the balance sheet at the end of it from the figures given below.

Ledger balances before closing the books Dec. 31, 1920, follow: Capital Stock \$93,750, Plant \$70,675, Bills Receivable \$38,400, Accounts Receivable \$29,500, Cash \$14,065, Bills Payable \$37,500, Accounts Payable \$6,250, Sales \$80,250, Wages & Salaries \$24,592, Raw

Material \$37,908, Merchandise Discounts Taken \$2,500, Merchandise Discounts Given \$440, Power \$3,125, Insurance \$155, Taxes \$310, Interest Charges \$410, Commission Charges \$1,875, Office Supplies \$180, Sundry Expenses \$4,505, Repairs \$685, Depreciation \$425, Surplus \$7,000.

Additional information is obtained as follows: notes receivable not shown on the books amounting to \$4,400, discounted in 1919, were today protested, and will be taken up to-morrow; \$1,000 of specified accounts receivable and \$5,000 of unspecified accounts receivable are deemed bad; insurance expired is \$100; taxes have accrued against the company \$200; interest liability is \$100; commission liability is \$125; the inventory of raw materials is \$17,000, but its market value is \$18,000, and the inventory of supplies is \$80; not recorded on the books is a loss just occurred — a severe storm has done \$750 damage to the plant, but \$600 of the amount is recoverable from insurance.

5. The balance sheet of the Adhesive Chemical Co. as drawn up by the treasurer is as follows:

Cash	\$237,000	Accrued Items	\$76,000
Accounts Receivable	769,000	Accounts Payable	139,000
Merchandise	474,000	Notes Payable	64,000
Raw Material	63,000	Capital Stock	1,200,000
Goods-in-Process	318,000	Surplus	1,280,800
Fixtures	12,000	Dividends	12,000
Land	400,000		
Buildings	447,000		
Good Will	51,800		
	<u>\$2,771,800</u>		<u>\$2,771,800</u>

To-day the market value of the land is \$460,000, and of the buildings is \$400,000. The merchandise has a market value of \$460,000. Of the Goods-in-Process, \$18,000 are defective and have a scrap value of \$2,000. The Good Will represents an advertising campaign of a few years ago. The fixtures cost \$12,000 five years ago, but are now worth only \$9,000. The dividends shown were declared two years ago but have never been claimed by the then stockholders. Of accounts receivable, the general uncollectibility is estimated at \$69,000.

Is the balance sheet correct? If so, defend it. If not, what should be done to correct it? Show the balance sheet as you think it should look.

6. You have agreed to sell your entire output of manufactured goods for two years to an associate at cost plus 10% of the cost. What should you have charged for the goods which were produced in the first year under the conditions given on the next page? The goods were actually sold for \$275,000.

*Trial Balance, Dec. 31*

Capital Stock		\$190,000
Real Estate	\$50,000	
Account Receivable	60,000	
Goods-in-Process, beginning	50,000	
Raw Material	50,000	
Plant	75,000	
Cash	15,000	
Surplus		44,200
Wages & Salaries	184,000	
Maintenance	5,000	
Insurance	2,200	
General Expenses	15,000	
Rent of Real Estate Let		2,000
Fire Loss	5,000	
Sales		275,000
	<u>\$511,200</u>	<u>\$511,200</u>

The real estate includes property occupied, \$30,000, and property rented, \$20,000. There is no need for an allowance for bad debts, for your one customer is sure to pay for the goods. The inventory of goods-in-process at the end is \$40,000; of raw material, \$18,000. The plant has depreciated \$2,000.

Wages & Salaries includes \$2,000 of unearned salaries, paid during a shut-down due to a fuel shortage, \$3,000 paid for the installation of a sprinkler system, and \$40,000 paid for administrative salaries. The insurance charge includes insurance on plant \$1,400, on merchandise \$600, and on real estate rented \$200. Of the General Expenses one-third was incurred for manufacturing, and two-thirds for administration. The fire loss resulted from a fire in the rented property. Administrative costs of \$5,000 have been incurred but have not yet been paid for.

Construct an operating statement to show whether the selling price was in accord with the cost-plus contract; and show the surplus account for the year.



## CHAPTER XVIII

### DEPRECIATION AND MAINTENANCE

**Summary of Previous Discussion.** We have already observed in Chapter VIII that depreciation as a cost consists of shrinkage in value with regard to the use made of property, and has no concern with shrinkage which would be suffered if the property were shifted to another use, as sale instead of production; that one kind of depreciation is obsolescence, which though due to changes outside the property itself affects the value of the property through a supplanting of it or through the demand for its product; that maintenance consists of repairs or replacements which, as far as they go, offset depreciation; that so far as cost is concerned there is no difference between depreciation and maintenance — the first representing a gradual and continuous outlay of fixed property, and the second an occasional outlay of cash (or incurring of debt) in the avoidance or the overcoming of the first, so that both are outlays and the only difference lies in the form which the outlay takes. We also saw in Chapter IV that depreciation when the result of business operations and not of mischance consists in converting values formerly in fixed assets into quickly moving assets, as value in machinery gradually converted by productive processes into value in manufactured goods. This conversion, moreover, must in the long run apply to obsolescence as well as to deterioration by wear and tear, for prices of goods must in the long run yield a reasonable return on costs, and among the costs is obsolescence of property due to the constantly shifting demands of the public. In any particular case, if the obsolescence is not recovered in the manufactured product it is a loss of the owners of the business — like all other debits, when it does not represent an asset acquired it represents an ownership-claim reduced.

**Depreciation without Maintenance.** Sometimes property has a usefulness so short, either naturally or because of changes outside itself that have reduced its natural usefulness, that the most economical treatment of it is to wear it out as quickly as possible. Replacement is sometimes cheaper than care, particularly if obso-

lescence is going on rapidly; for obsolescence goes on day and night, Sundays and holidays, whether the machine is used much or little, and so sometimes one must get even with it by forcing the machine to do all it can before obsolescence renders it worthless. The extreme case of this would be one in which the only cost for wear and tear would be depreciation without maintenance. Supposing such a machine to endure three years without repairs or replacement of parts after the policy is decided upon, the operating statement will show each year a charge for depreciation (without any for maintenance), and a reduction of the machinery account, or an increase in the allowance account, for a similar amount. Then when replacement of the exhausted property takes place, a charge will be made to the machinery account (or to the allowance account to reduce the size of the recorded "hole in the asset"), restoring the original situation. Maintenance does not appear on the books at all. This is of course rather theoretical than real, for it is hardly conceivable that property should run three years without some repairs, even though it was the wise policy to reduce repairs to a minimum and to exhaust the property as rapidly as is consistent with economy; but this case illustrates what we mean by a policy of depreciation as contrasted with a policy of maintenance.

**Maintenance without Depreciation.** Much more common is the reverse case. It is true that no piece of property can be maintained in pristine value by repairs, or by replacement of parts, for obsolescence goes on and cannot be offset; but property in large aggregations can be maintained, for while some pieces are growing less valuable by obsolescence, other pieces may be replaced by substitutes that have greater value than what they replaced. A simple illustration of this is railroad equipment. A road may have \$10,000,000 worth of locomotives and cars, some nearly new, some of average age, and some about ready for the scrap heap. Let us suppose that during the year it sends to the scrap heap equipment having a value on the books of \$100,000, and that, after allowing for repairs made, the depreciation on the rest of the equipment amounts to \$600,000. Supposing (for the sake of illustration, though practically this is not quite possible) that the abandoned equipment has no value, the total depreciation is of

course \$700,000; but if during the period new equipment is bought for \$700,000 to replace that depreciated, no depreciation of the property as a whole has occurred; for though some of that which was previously new has grown older, and some which was of average age is now approaching abandonment, and still other is ready for abandonment, so much has been added in value through the substitution of new equipment for that which was a year ago about ready for abandonment, that the net condition of equipment as a whole is exactly what it was a year ago, and no depreciation, taking the year as a whole, has occurred — though during parts of the year depreciation has been incurred and in other parts has been overcome. The balance sheet will show no change, and the operating statement for the whole period will show \$700,000 for maintenance.

**Maintenance with Depreciation.** Common operating conditions involve both maintenance and depreciation, not only from choice but from necessity. In the first place, some kinds of property cannot be economically maintained, for the simple reason that consisting of wholes and not of parts and lasting many years there is no way to replace them except at long intervals. Though theoretically a machine can be kept in good condition forever by the replacement of one part after another as the parts wear out, in fact this is virtually impossible, for obsolescence sets in. A building, on the other hand, being a structural unit, must be more or less destructively torn to pieces whenever replacement of parts occurs. The only way in which a building can be maintained without depreciation is by constant additions and improvements in one direction that offset inevitable loss of usable value (or share in final disappearance of value) in another, so that, so to speak, like the nautilus one moves out of the old building into the new bit by bit until the old is abandoned. This is of course extremely rare. The only other case in which real estate can be maintained is that in which many pieces of real estate are held and depreciation on some is offset by improvements on others; but since usually, and desirably, every piece of real estate is given a separate ledger account (as separate pieces of equipment and machinery are not), this is not in practice a situation that avoids depreciation. So normally depreciation and maintenance are coincident.



**Depreciation of New Property.** Another kind of case commonly involves unavoidable depreciation even though on its face it seems a case where maintenance will serve all needs. If a business has a new plant throughout, even though the equipment consists as a whole of many parts so that it seems possible to offset depreciation of some parts by improvement of others, so long as the property is fairly new no appreciable number of parts need replacement and no opportunity is offered to offset the depreciation of all. All are depreciating together. Never again, presumably, will the plant be all new — at least such a circumstance is unlikely to happen again in a great many years in the same business — for not all parts will have the same life or depreciate at the same rate. So it virtually is impossible by maintenance to restore the plant, for the original condition of universal newness is impossible of attainment. The case becomes like that of real estate — though not from the nature of the property, but from the circumstances attending its purchase. Only in case additions were made to the plant annually, offsetting the gradual depreciation, can the value of the whole be maintained. To put this in another way, the normal condition of any plant is one of half-newness — some property new, some of average age, some old, and some in all the intermediate stages; after equilibrium has once been established — that is, a normal working basis — the task of maintenance is to keep the property as efficient as possible at the greatest age consistent with economy, and of depreciation is to represent the cost or outlay that maintenance has not taken care of.

**The Debits and Credits.** Remembering that books are not kept written up to the time, we must now see that what will be debited at the time of adjustment depends largely on the time of making an entry, and the credit depends upon the debit. If at the time of making an entry to bring the books to the time we find that we have not maintained our property for the period, we debit Depreciation and credit the property or Allowance for Depreciation; if we find that we have maintained our property we make no entry, for Maintenance has already been debited and Cash (or some other real account) has been credited; if, on the other hand, the property has already been written down on the books for de-

preciation, either in the same period or earlier, we must not when we replace it debit Maintenance but must debit the property account (or Allowance for Depreciation) — else the outlay will be charged to costs twice, once when the property was worn out and again when it was replaced; but both Depreciation and Maintenance are nominal accounts and represent costs. The entry for closing the books, then, depends upon what has happened since the books were last adjusted to the facts. This may be summarized as follows: we debit Depreciation for the outlay (exhaustion, part or whole) of the property itself since the last adjustment of the books; we debit Maintenance for the outlay which overcomes depreciation since the last adjustment of the books if the depreciation has not already been debited to Depreciation; we debit the property account (or Allowance for Depreciation) for outlay which overcomes depreciation that has already been entered on the books.

**Debits and Credits Illustrated.** Suppose we own a piece of real estate with a value on the books of \$30,000 on January 1. On March 31 we wish to prepare local tax returns, and in preparation for this we decide to enter upon our books depreciation up to this time. As we have made no repairs since January 1, let us suppose that we debit Depreciation and credit Real Estate \$150 (\$50 a month), giving us a book value for real estate of \$29,850. On April 30, we spend \$200 for repairs. To what shall we charge it? If we assume \$50 a month equivalent to complete maintenance, as we did for the first three months of the year, it is obvious that we have now for the four months maintained the property — though some portions of the building are in poorer condition than four months ago other portions are better and the general condition is the same. The building is in value back where it was on January 1; but on the books it is now at \$150 less. We may charge Real Estate for that \$150. The other \$50, however, we may not charge to Real Estate, or we shall have the property overvalued. It has been spent in keeping the property unimpaired during April and is an April operating cost, not chargeable to the asset account, because already converted by use. So it is charged to Maintenance. Here are our three typical debits for wear and tear: to Depreciation, for exhaustion of value; to the property account,



for replacement of value that has already been written down; to Maintenance, for replacement of value before it has been written down. In case the property has not been written down directly but has been written down through a contra, or allowance, account, the substitution of the allowance account for both the debit and the credit to the property account completes the illustration of entries.

**Objection to Frequent Record of Depreciation.** In the example given in the preceding paragraph, it will have been noted that in closing the books for these four months \$150 will be transferred to Operating Expenses or other clearing account from Depreciation, and \$50 will be transferred from Maintenance; and the charges to be carried to the operating statement consist of \$150 for depreciation and \$50 for maintenance. Yet this is false. It gives a distinct impression of neglect of the property, and though it does not overstate costs it does misrepresent the kinds of cost incurred. That is the objection to entry of depreciation on books of account before the end of the period to be reported, for before the end of the period the depreciation may be overcome by maintenance, and, if the property or allowance has already been credited for the depreciation, the entry for restoration must debit the property or allowance account and leave the false impression on Depreciation uncorrected. To report things truly, then, either depreciation should not be entered until the end of the period, when it may be known, or a device for correcting the misleading statistical figures should be adopted. In this case, the obvious thing is at the time of the \$150 of restoration accomplished in April to make an additional entry to overcome the depreciation of the first three months, debiting Maintenance and crediting Depreciation. As this entry involves only statistical accounts, an exchange of classification of an item from one statistical account to another, and as the ultimate disposition of the charge is the same in whichever place it stands (Operating Expenses, or Loss and Gain, or what not), it is not only harmless but desirable if statistics are to be useful. It is better to avoid the misleading first entry and thereby avoid the necessity for the second or correction entry. This may be accomplished by a temporary or interim account for depreciation.



**Repairs, Replacements, and Betterments.** Repairs consist of minor changes restoring the property to serviceability or preventing it from becoming unserviceable when the changes consist in the alteration of adjustments, change in the shape of parts, substitution of small parts not integral but subordinate units (subordinate parts, bolts, nuts, rods, etc., but not integral parts like feeds, wheels, frames, etc.). Replacements, on the other hand, consist of the substitution of complete units, whether integral parts of single machines or whole machines, for old units abandoned. They equally constitute costs, and in one point of view, therefore, need no differentiation. In another respect, however, they are fundamentally unlike: repairs can never do more than offset depreciation, for they can never make the property better than it was before the repair became necessary; but replacement may substitute a better part or even a better whole machine and therefore improve the property to better than its original state. Replacements, then, may increase assets if they exceed depreciation. In that case, the excess of replacement over depreciation not covered by repairs is often called "betterment." If our estimated wear and tear annually for a plant is \$12,000, if our repairs are \$3,000, and if our replacements are \$2,500, depreciation is obviously \$6,500; but if our repairs are \$3,000 and our replacements are \$10,000, betterment is obviously \$1,000 and should be charged to the property account, or be carried in a special account for betterments of property. Some accountants dislike to add to the property account directly unless an actual increase in the number of units of plant has occurred — i.e., unless there are more things to be counted — and hence carry to Betterments all increases in value of property where no increase in the number of pieces of property has occurred. Sometimes a distinction is made between depreciation of property continued in use and abandonment of property. When that is done, Depreciation is used for the first, and Retirement for the second; both of course are costs; in most businesses this is an unnecessary refinement.

**Methods of Estimating Depreciation.** We have already observed that the distribution of depreciation between periods is important. It is also difficult. The difficulty arises from two causes: the total depreciation itself is impossible to learn until the

end of the use of the property; and the elements entering into a basis for fair distribution between periods are so numerous and so conflicting that choice between them is bound usually to appear to violate fairness somewhere. No attempt can be made here to discuss all the principles of distribution, to take up all the methods found in practice, or even to show the common rates of depreciation applied to specific kinds of property. Such things belong in a book on depreciation. All we can do here is to give a few illustrations of common methods and principles.

**Simple Bases of Depreciation.** The most obvious basis for depreciation is time, for property depreciates through mere lapse of time, especially because of obsolescence and of weathering (both outside weathering and inside climatic conditions). It also depreciates largely from use, wear and tear, and hence product is an obvious basis for depreciation. Again, since the value of property is dependent on what it will produce, and after a machine has reached a certain limit of maximum production it not only produces less, and possibly poorer goods, but costs more for repairs and operation, the depreciation may take into account its value in such respects. These and other considerations are pertinent. The main difficulty with them is that they conflict, and to give them due weight would mean elaborate mathematical calculations to find the amount of emphasis each should have.

**The Straight-Line Method.** The simplest basis is the time basis, giving what is commonly called the "straight-line method," because on a graphic chart the line of the value of the property is straight. If, for example, a machine cost \$1,000, is expected to last eight years and then to have a scrap value of \$100, the annual depreciation is \$112.50  $[(1,000 - 100) \div 8]$ .<sup>1</sup> It neglects at least three rather important facts: (1) one does not need to save \$112.50 out of product now and each year for eight years in order to accumulate \$900 in eight years, for money will earn interest, and hence less than \$112.50 a year is sufficient; (2) the machine will require more repairs in later periods, and hence, to distribute its cost evenly over all periods, the periods in which repair charges are low should bear more for depreciation; (3) the product of the machine may not run evenly over the years, and probably will

<sup>1</sup> This is shown graphically on page 305.

not, for seasons differ, and if one-eighth of total depreciation is to be charged to product each year irrespective of productiveness the cost per unit of product will be much higher when production is low than when it is high. In spite of these defects this is the commonest method. Its simplicity is deemed to offset its theoretical weaknesses. This method obviously encourages the use of the contra account for depreciation, for when the same percentage of original cost is used for depreciation year after year it is convenient to have original cost preserved on the books without other change than additions and sales (which affect the amount to which the percentage is to be applied).

**The Sinking-Fund Method.** In general principle not unlike the straight-line method is the sinking-fund method; but it allows for the fact that one does not need \$112.50 a year for eight years in order to accumulate \$900 in eight years, for interest on installments of the early years will make them up to \$112.50 each. So the installments in early years are smaller, and the calculations are those of sinking funds, which are discussed in Appendix C.

**The Reducing-Balance Method.** A method which takes cognizance of the fact that maintenance will cost more in later years, and hence depreciation should be charged more in early years in order to equalize wear-and-tear charges over the life of the machine, applies a fixed percentage to the last book value, and hence gets a smaller amount for depreciation each year; for a constant percentage on a diminishing value gives a diminishing depreciation. The determination of the percentage requires a mathematical formula (or the empirical try-and-try-again plan). If our machine has a cost of \$1,000, an estimated life of eight years, and an estimated scrap value of \$100, the rate of depreciation for any year will be approximately 25% on the value of the preceding year, giving us the following table (cents omitted):<sup>1</sup>

<sup>1</sup> The formula for this is as follows: let  $P$  = the cost;  $S$  = the scrap value;  $x$  = the desired rate;  $p$  = the number of periods required for depreciation; then  $x = 1 - \sqrt[p]{\frac{S}{P}}$ . Applied to the case in hand, we have  $x = 1 - \sqrt[8]{\frac{100}{1000}}$ . The logarithm of  $\frac{100}{1000}$  is  $\bar{1}$ . One eighth of that is  $-.125$  or  $\bar{1}.875$ . The natural number corresponding is  $.74989$ .  $1 - .74989 = .25011$ , or 25.011%.



<i>Book value</i> <sup>1</sup>		<i>Depreciation</i>	
Cost	1000	For year 1	250
End year 1	750	2	188
2	562	3	141
3	421	4	105
4	316	5	79
5	237	6	59
6	178	7	45
7	133	8	33
8	100		

It is clear that under this method it would be a convenience to have depreciation entered directly on the property account, so that the percentage could be applied directly to the balance of that account each year. This method, it will be observed, takes much larger shares in early years than in late, for its purpose is to absorb a good deal of depreciation in those years. A reason for doing this, in addition to that already mentioned, is that since depreciation can be taken only by guess at best, and poor judgment may lead to false hopes, it is wise to take it liberally in early years, so that if obsolescence overtakes the machine unexpectedly the loss will not be suffered too heavily all at once.

**The Reducing-Fraction Method.** The mathematical difficulty of the reducing-balance method is one drawback to its use. A convenient substitute lies in arbitrary fractions that produce approximately the same results. What we desire is a series of fractions that will progress according to a definite plan and will amount to unity, and we wish one fraction for every year of the life of the machine. If we decide to use fractions of which the denominator shall be common to all and the numerator shall be decreased by one each year, we find solution of our problem easy. If for the last year the fraction is  $1/x$ , for the preceding year it will be  $2/x$ , for the next preceding  $3/x$ , etc. Since all our fractions together must equal unity, so as to depreciate the property fully, our denominator must be equal to the sum of the numerators, and the highest numerator will equal the number representing the life of the machine. So to find our denominator we add together the numbers representing the years of life; as  $1+2+3+4+5+6+7+8=36$ . Then the depreciation for the first year

<sup>1</sup> This is shown by a graphic chart on page 305.

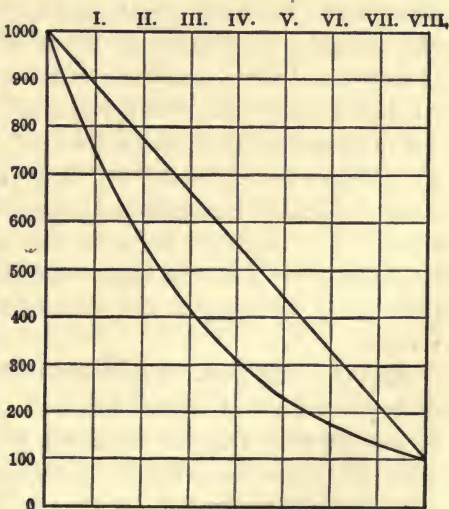
will be  $8/36$ , for the second  $7/36$ , and continuing so as to give the series:  $8/36$ ,  $7/36$ ,  $6/36$ ,  $5/36$ ,  $4/36$ ,  $3/36$ ,  $2/36$ ,  $1/36$ , or a total of  $36/36$ . This applied not to the decreasing value of the property but to its original value gives depreciation and values for our case above as follows:

<i>Book value</i>		<i>Depreciation</i>	
Cost	1000	For year 1	200
End year 1	800	2	175
2	625	3	150
3	475	4	125
4	350	5	100
5	250	6	75
6	175	7	50
7	125	8	25
8	100		

This is most conveniently handled when depreciation is carried to Allowance for Depreciation, for the fractions are applied always to original cost.<sup>1</sup>

#### Depreciation Charted.

The most convenient way to compare the straight-line and the reducing-balance method of depreciation is to present the book values under the two methods in the form of a graphic chart. In the chart shown, the horizontal lines are placed at intervals to represent hundreds of dollars of value remaining in the property, and the vertical lines to repre-



<sup>1</sup> If it is desired to use this type of method but not to get so great a difference in depreciation between early and late years, the denominator in the last year may be greater than 1, say 5: then the series would run as follows:  $12/68$ ,  $11/68$ ,  $10/68$ ,  $9/68$ ,  $8/68$ ,  $7/68$ ,  $6/68$ ,  $5/68$ . On the graphic chart shown above this would give a flatter curve than either the fractions given above or the percentages of the reducing-balance method, for it would give a 50% depreciation at a little later than the end of the third year, whereas both of the others produce 50% well before the end of the third year.

sent the ends of years of the life of the machine. The straight oblique line shows the valuation of the machine under the straight-line method, beginning at \$1,000, passing the end of year I at the level of \$887.50, the end of year II at the level of \$775, etc., and ending with a scrap value of \$100. The curved line shows the same sort of thing for the reducing-balance method, and gives a very heavy drop in valuation in early years and a slow drop in late years — very nearly one-half being written off in the first two years.

**Application of Blanket Rates.** It is obvious that if depreciation must be taken into account for large groups of assets at once, rather than for single items of property, it is desirable to classify items of property in such a way that no two items subject to different rates of depreciation shall be carried to the same property account. If this precaution is taken, it may be possible to apply a rate of depreciation to a whole property account at once and thus reduce the labor of calculation to a minimum. This is actually possible, however, only if one of the two following suppositions is true: all property in the account is of the same age, or the straight-line method of depreciation is used; for otherwise though the rates might be the same for corresponding years in the life of the machines, they would not be applicable at actually the same times. This is an additional reason for the popularity of the straight-line method: the same rate is applied to all property of the same type (i.e., the same estimated life), and hence it is applied to all property in the account for one class, irrespective of its age.

**Appraisal Method.** Sometimes no predetermined plan or rate of depreciation is adopted, but each year an examination is made of the property and the shrinkage is determined by observation. This should be independent of changes in market price of corresponding new property, for we are concerned here not with replacement but with depreciation of old, as we saw on page 279. When valuation can be found, and distribution of depreciation over periods can be made more accurately this way than by a predetermined rate, this is a better method.

**Providing for Replacement.** So far we have considered only the cost aspect of depreciation. The business manager is usually



concerned also with the practical provision for replacement. Shall he accumulate a fund ready for the day when replacement of worn-out property becomes necessary? If so, where is the money coming from to establish and continue the fund? If he does not establish such a fund, from what source will come the money necessary to replace the property worn out? Many a manager has been puzzled by these questions. The first thing is to see just what has been accomplished by making entries for depreciation. In the first place, we have not secured assets by such entries, for bookkeeping never produces assets. All that our bookkeeping did was to point out that wear and tear of property was a cost of operations, that profits could not begin until that wear and tear had been returned in the product, and that a part of the product (in whatever form it happened to be — whether goods-in-process, finished goods, accounts receivable, or cash) was nothing but former real estate, machinery, or what not, converted into more nearly liquid form. Our entries showed us that unless the business has suffered a loss the property for replacement is already available for replacement, though it may not chance to be in form sufficiently liquid at this moment (for one cannot usually buy machinery directly with merchandise or accounts receivable). Our entry for depreciation has, in a sense, put a label on our assets and tagged them as partly “conversion of machinery or other productive property, available for replacement”; for on the operating statement we find (unless a loss has been suffered) converted assets yielding at least as much as their cost including depreciation, and we find that the balance sheet is in balance even with the writing off of the depreciated asset or setting up of an allowance. If the balance sheet does not show a deficit or other shrinkage of proprietorship through loss, does show a shrinkage in the depreciated property or an allowance to represent it, and is in balance, the depreciated property must have converted itself into other assets and those assets must be in the business — else the assets would not equal the ownership-claims. This is so important, and is so often misunderstood, that a series of summary entries to indicate the process of conversion is worth while.

**Entries for Conversion Operations.** Suppose a business which

utilizes machinery and chances to be conducted without profit starts a year with the following simple balance sheet.

Cash	\$ 5,000	Accounts Payable	\$ 8,000
Accounts Receivable	18,000	Proprietor	55,000
Machinery	<u>40,000</u>		
	<u>\$63,000</u>		<u>\$63,000</u>

Suppose, to make the illustration a severe test of the principle, that in the following period not all bills are collected. Using the simplest possible transactions for a year's operations, but transactions nevertheless typical, we may have the following entries.

Purchases/Cash	20,000
Expenses/Cash	5,000
Depreciation/Machinery	1,000
Accounts Receivable/Sales	26,000
Cash/Accounts Receivable	25,500
Loss and Gain/Purchases	20,000
Loss and Gain/Expenses	5,000
Loss and Gain/Depreciation	1,000
Sales/Loss and Gain	26,000

Supposing we now have no inventories or accrued items, we get the following balance sheet.

Cash	\$ 5,500	Accounts Payable	\$ 8,000
Accounts Receivable	18,500	Proprietor	55,000
Machinery	<u>39,000</u>		
	<u>\$63,000</u>		<u>\$63,000</u>

We observe at once that both total assets and proprietorship are intact. Where is the property available for replacing the machinery? It lies in the increase of cash and of accounts receivable. The fact that the balance sheet still is in balance, without a deficit or shrinkage in proprietorship, shows that the assets have not declined and hence the means of replacement must be there somewhere. A part of the machinery has been literally converted into cash and accounts receivable. Quite the same thing would be true if for the credit to Machinery we had substituted a credit to Allowance for Depreciation. Our balance sheet would then have been \$1,000 bigger on each side, but both sides would have been statistically padded, so to speak — by the overvaluation of machinery on one side and the allowance on the other. It would still

be true, however, that assets for replacement are in the business and shown on the balance sheet, for after allowing for the padding the assets are as valuable as before the conversion.

**Special Provision for Replacement.** We have seen that if depreciation is not neglected in the accounts and loss has not been suffered and capital has not been withdrawn, assets must be available for replacement. A further precaution must be taken, however — that at the time replacement becomes necessary the assets into which the old property has been converted shall be liquid enough to serve for replacement. If machinery in a mill has been gradually depreciated and the converted assets accumulated, and then those converted assets have been invested in a new dam for the mill, the property of the mill as a whole is intact; but the machinery cannot be replaced from the dam, and hence one kind of fixed property has been converted into another kind of fixed property and replacement of the first is now impossible out of the converted property, except after another long, and this time a very long, new conversion. Watchfulness is required to make sure that lines are laid to have liquid assets available when needed. The surest way to do this, of course, is to set aside assets year by year in a special fund for replacement. This usually is done by buying securities that are readily saleable and debiting them to Replacement Fund Securities. Then we have on our balance sheet the provision for replacement specially labeled, whereas the other method leaves it as an indistinguishable part of general assets indicated only by the fact that an allowance has been set up (a rather inconspicuous label) or that the fixed property account has been written down (virtually an invisible label). The main objection to the setting aside of a replacement fund is that usually a business can earn larger income with capital that it utilizes in its own operations than with what it lends or invests outside, and that therefore it may at the same time accumulate a replacement fund and earn an extra profit by applying its converted assets to its own direct activities. When care is taken that the funds be not too much tied up, this is often good policy.

**When No Replacement is Contemplated.** Sometimes replacement is impossible because supply of the asset is limited and no



more can be had. This is notably true of mines, quarries, oil wells, etc. These convert so-called "wasting assets." Operations consist primarily in exhausting the assets and only wasteful expense could be involved in putting new assets back. In such industries depreciation is a specially important element. If it is neglected, when proprietors get back their capital in the product they will think they are getting profits, and when the property is exhausted they will suddenly wake to the fact that not only have profits stopped but capital has disappeared. If, on the other hand, depreciation is properly recorded (in this case it is usually called "depletion" — to show that not only value but physical property itself has disappeared), at the end of each period the accounts will make evident the fact that an appreciable part of the assets are mere conversions and not profits. If the business cannot well use these converted assets for expansion, it will usually distribute them to owners; but the managers should leave no stone unturned to make clear to owners that a part of the distribution is capital and not profits.

**Secret Reserves.** The contrary of the error discussed in the preceding paragraph, making insufficient charge for depreciation, results in what is commonly called a "secret reserve." This will result equally, however, from excessive charges to Maintenance. Suppose in the case given on page 301, with estimated wear and tear at \$12,000, repairs at \$3,000, and replacements at \$10,000, the whole \$13,000 of repairs and replacements had been charged to operations and none to betterments. If the estimate of wear and tear is correct, some facts are hidden: profits have been understated, for \$1,000 of the outlay was not consumed in making the product of the year; and assets have been understated, for \$1,000 of betterments have not been reported among the assets. A part of the profits (both the credit to proprietorship and the debit to the asset account) are secret. Being secret, they are reserved from distribution: hence the name. Any overstatement of expenses, with consequent understatement of assets (for the assets are deemed to have disappeared when they are still existent) establishes a secret reserve.

**What is Maintenance?** We have observed that treating as nominal (depreciation or maintenance) what should be treated as

real creates a secret reserve. We have also seen that the converse is true — treating as an asset what has been consumed overstates profits and leaves a secret hole or overvaluation in the assets. Yet both of these are often unwittingly done. If error is made in determining whether the replacement just offsets the depreciation, either a secret reserve or a secret overstatement of assets will be involved in the records. What is it to replace or maintain property that has been exhausted? Is it to maintain the power to produce commodities and services; is it to maintain the productivity in value of commodities and services; is it to maintain the market value of the assets; is it to maintain the earning capacity, or profit-producing capacity; or is it to maintain the value invested or locked up in the plant? If maintenance means replacement of productive capacity, a change in prices means that it may cost \$1,200 to replace a machine originally costing \$1,000, and the charge to Maintenance should be \$1,200. If maintenance means replacement of market value, a change in prices that puts what was formerly a \$1,000 machine at \$1,200 means that when a new machine takes the place of the old a debit may be made to Maintenance for \$1,000 and to the asset account for \$200; for not only has the market value of the assets risen \$200, so that the asset account should be increased, but only \$1,000 was needed to maintain the market value of the property. If maintenance means replacement of earning capacity, a change in competition may mean that whereas previously a \$1,000 machine earned profits of \$200 a year now it takes \$1,200 of machinery to earn \$200 a year, and the \$1,200 spent to replace the old \$1,000 must be charged to Maintenance. If replacement means replacement of investment, an increase in price of a machine from \$1,000 to \$1,200 means that when replacement is made \$1,000 will be charged to Maintenance and \$200 to assets, as an addition to capital. These various interpretations of maintenance thus give differing figures for the balance sheet and for the income sheet.

**Charging against Revenue and Charging to Capital.** Charging to Maintenance is commonly called “charging to revenue,” or more properly “charging against revenue,” for maintenance is counted as an operating cost and must be met out of the revenue

of the period; but charging to the asset account is called "charging to capital," for it assumes that the expenditure involves an addition to the property or capital in the business. It is obvious that the total expenditure on account of replacement of property must be charged either to Maintenance or to the asset account; for unless the expenditure is wasted it replaces old property not written down, or adds property (either replacing property already written down, or adding new property). Since Maintenance is only temporary or statistical, and the balance sheet is the final destination of all figures, we are concerned primarily with the effect of these various points of view upon that sheet. If we charge to capital, i.e., to the asset account, the effect of replacement on the balance sheet is a change in the form of assets (e.g., machinery instead of cash), but proprietorship is not affected. If we charge against revenue, i.e., to Maintenance, we assume that the replacement has merely restored property converted, is a cost and a reduction in proprietorship — or an offset to what otherwise would be increases in proprietorship coming through the yield from converted assets. So the entry which charges to capital leaves proprietorship unchanged, and that which charges against revenue reduces proprietorship below what it would be if the replacement had not been necessary; and it makes no difference whether we think in terms of assets or in terms of proprietorship, for they are two aspects of the same thing. Whether we shall charge to capital or against revenue is determined by the basis of capitalization; for this decides what shall be charged to capital, and the rest of the expenditure for replacement is charged against revenue.

**Three Bases of Capitalization.** The term "capitalization" has many uses, as "total issue of capital stock," "total investment — capital stock and bonds issued," and "book figure of assets." We are here concerned with the last of these uses only, the figure placed upon assets in books of account and in reports. This is important, of course, for any misunderstanding is likely to mislead — mislead as to profits, as to investment, as to the rate of profits, as to solvency. Hence a basis for capitalization must be clearly defined. Though the five suggestions as to the possible meaning of maintenance given on page 311 appear to offer five



points of view with respect to capitalization, as a matter of fact the first two constitute engineering rather than accounting standards and hence for accounting purposes require conversion into dollars and cents in the form of one of the other three. These other three are more or less accepted bases for accounting and need examination. Before we can choose between them, however, we must decide what we wish our balance sheet to show; for though commonly the three bases of capitalization give the same results on the balance sheet, in many cases they produce results widely different.

**The Function of the Balance Sheet.** We have seen all along that all debits are for either assets or ownership-claims, and that in any case they produce their effect on the balance sheet; for if they are for direct acquisition of assets they appear directly on the sheet, if for conversion of assets they appear as converted, if for losses they reduce proprietorship, and if for payment of debt they reduce liabilities. It follows, therefore, that an error anywhere gets sooner or later upon the balance sheet unless compensated for by another error elsewhere, and that therefore unless there are compensating errors profits cannot be right unless the balance sheet is right. To say that we must choose a basis for balance-sheet figures, therefore, is to say that we must also choose a basis for profit or loss figures. The uses to which a balance sheet as a whole are commonly put are four: (1) determining solvency, in which case the assets must be taken at the value at which they could be converted for the purpose of paying debt; (2) determining the advisability of lending the business money or giving it credit for merchandise, in which case the lender is concerned not with ultimate convertibility after the long and expensive processes of liquidation, but with the assets soon available for paying the debt; (3) determining the value of the assets not for liquidation but for the uses of a going concern, so that one may see the present value of what is now utilized in the business; and (4) determining what is now actually invested in the business by its owners, irrespective of what the same property or an equally effective property would cost to-day and of what it would bring to-day if liquidated. It is obvious at a glance that no balance sheet can naturally serve all these purposes at once, for they are

conflicting. The first and the last, for example, are commonly wide apart: every one knows that if he tries to force property on the market for immediate sale it is likely to bring much less than cost — for people must be offered a very low price to induce them to buy what they are not now seeking to buy. Realizing, then, that no balance sheet can naturally serve all these purposes at once, we must choose a basis and realize always that our balance sheet is to be constructed on that principle: we must not use it as if it were constructed on some other principle. Let us see how far a balance sheet serves these uses, or any of them.

**The Balance Sheet and Solvency.** Although the balance sheet has much value as an indicator of solvency, usually it cannot carry one far toward a definite conclusion. Some methods of interpreting balance sheets are discussed in Chapter XX; but the fundamental fact should not be forgotten for a moment that a large part of the assets of most businesses are not held for sale or for early conversion, that if they were put on the market and sold they would bring but a small part of their book value, and that to judge solvency by sale value of assets is to neglect an important business principle. The value of assets to a going concern is far greater than the value of those assets at a forced sale. If a business should put on its balance sheet at sale value the items of real estate, machinery, equipment, etc., that it had just bought for conducting operations, it would begin with a large deficit; for the cash which it had just given up would far exceed the value to be placed on the books in its place. It is impossible, therefore, for books to give a balance sheet that will show outright, without qualifications and mental adjustments for circumstances, the liquidating solvency of a business, unless the books are kept on that plan, and this destroys their value for guidance in operations; and since operations are usual and liquidation is abnormal, it is better that books should be kept as for a going concern. So the needs of the first of our four uses of a balance sheet must be repudiated as a basis for capitalization.

**The Balance Sheet as Credit Indicator.** When the balance sheet is used for guidance in determining whether credit shall be given to a business, virtually the same principles apply as when it is used for judging solvency. The only difference is that a smaller

number of items are of importance, for the creditor will look to specific items for his security and not to general liquidation. He will expect a liberal margin of safety, and will never in his own mind use balance-sheet figures as they stand: he will wish to apply his own judgment of values in conversion, for the purposes of his own claim; and his judgment will differ from another man's. So it is equally impossible to keep books so as to produce a balance sheet exactly suited to a particular use as a credit statement without diverting the books to that particular use and destroying their usefulness for other purposes. So the needs of the second of our four uses for a balance sheet is repudiated as a basis for capitalization.

**The Balance Sheet and "Going Values."** The third use of the balance sheet is to show the value of the business as a going concern, but this in turn has two aspects, for usually two such values pertain to a property and they are often wide apart. Under the first, the balance sheet shows the value of the specific assets comprising the business, but looked at in the point of view of duplication rather than of sale. In this point of view the property is worth what to-day would be the cost of duplicating it. This is often spoken of in connection with hearings on rates charged by public-utility corporations. Under the second, the balance sheet tries to show the value of the business as a profit-yielding enterprise, and considers that its value is dependent on the profits that it yields, independently of the sale value of the assets, of its actual cost, and of the cost of duplicating it. Each of these gives a recognized basis of capitalization, and we must examine them to see what effect each produces on the balance sheet and how serviceable each is. The first of these, endeavoring to keep the balance sheet representative of what it would cost to duplicate the business, uses what is commonly called the "cost-of-duplication basis," or the "cost-of-reproduction basis," of capitalization. The second uses what is called the "earning-capacity basis."

**The Application of the Cost-of-Duplication Basis.** Suppose that we have ten machines which will last ten years each, and as a matter of policy we replace one machine a year and thus maintain rather than depreciate our property. The replacement of one machine offsets the depreciation of the other nine — the addition



to the value in one offsets the decrease in the value in the others. If the values of the ten had been written down before replacement, the replacement would be charged to the asset account, but we assume here that nothing has been written down for this period, and hence the charge is to Maintenance. Now suppose that for machines similar to those which originally cost \$1,000 we have to pay \$1,200. By cost of duplication, of course, we mean not the cost or market price of duplicating the specific property held, for that is often impossible as well as undesirable, but the cost of duplicating the productive capacity or efficiency. On the cost-of-duplication basis we wish our balance sheet to show the value of our productive capacity, and now with the increase in the price of the machine we need an increase in the balance-sheet figure for the new machine over the old. So we will debit Maintenance for \$1,000, for the replacement of the old cost (the cost of the old machine worn out), and the asset account for the \$200 added value — that is, \$1,000 is charged against revenue, and \$200 to capital not only because we have actually paid \$200 added cost of replacement, but because anybody else would have to pay that sum also as enhanced market price if he were to try to duplicate our productive capacity. Now let us observe what we have accomplished. The new machine is on our books at replacement value; but all property not recently replaced is still on at old values. In other words, either our balance sheet is a mixture of bases, with some at replacement values and some at old values, or else we must adjust all our old values to present replacement values. The only way we can increase values that have risen is to credit some gain account; but this, whether we credit a current or an accumulated gain account, is counting chickens before they are hatched — which we have already seen in Chapter XVII to be highly objectionable; and the only way we can reduce values is to debit some loss account — but we have suffered no loss if the property is still doing its work. As we have already seen in Chapter XVII, moreover, replacement values have nothing to do with profits and losses. Increases and decreases in replacement values affect the future requirements of capital for continuance in business, but they cannot affect the cost of producing with the old property. So they cannot affect losses.

**The Futility of the Cost-of-Duplication Basis.** Every appreciable change in the cost of labor, of material, of taxes, etc., affects the price of commodities, and hence the replacement value of all fixed property as well as of all salable property. Every change in the rate of wages, and in the price of bricks, of lumber, of builders' hardware, of window glass, etc., changes the replacement value of all brick buildings standing at the time of the change. Replacement values are not in the least stable. The value of machinery changes with the rate of wages, with the price of iron, with the cost of fuel to melt the iron, etc., etc. Hardly a day passes when the replacement value of a plant of large size is not affected by market changes. To attempt to have the books show such changes, even if only at the time of adjustment, would mean very heavy accounting cost. It would be already behind the times, moreover, as soon as done. Why, then, try to do it? Because we wish to know the value? Then why not have an appraisal made when one wishes the figures? As a matter of fact, duplication costs can hardly be calculated from the books in any case, for books do not usually show so many details of cost of fixed assets that one can apply a change in one or two elements to the old figures. Imagine, e.g., trying to determine from the books the effect, on the value of a building twenty years old, of an increase of 10% in wages. Figures adjusted to changing market conditions are extremely unreliable without appraisal, for few people know to what to apply the changes. Since the books cannot keep the records of duplication value but can only adjust for them, since the changes are not due to transactions of the business, since the figures are behind the times almost as soon as entered, it is rather absurd to enter them at all. In other words, the figure of duplication value of a plant cannot be got from the books in any case, is of only momentary value when put upon the books, and hence if any other basis will give more valuable permanent information that other basis had better be used.

**The Application of the Earning-Capacity Basis.** Let us turn now to the other method of showing on our balance sheet the value of the business as a going concern — considering it as an earning machine. Under the earning-capacity basis, if a machine costing \$1,000 were replaced by a machine to do the same work at

a cost of \$1,200, the charge for the \$1,200 would depend on circumstances. If the new machine was judged to earn no more profit than the old, the whole \$1,200 would be charged against revenue, so as to avoid increasing the capital charge; but if it were deemed more productive of revenue the portion deemed equivalent to the old earning capacity would be charged to Maintenance and the excess to capital. This is based on the theory that the value of every productive agent is determined by the relation between its earnings and normal earnings: if, for example, 6% interest is normal, any productive agent that will produce \$6 earnings is worth \$100, and any that will produce \$9 is worth \$150; but if interest is 5%, any agent that will produce \$6 is worth \$120, and any that will produce \$9 is worth \$180. This basis finds the market value of the business as a productive agent rather than the value of its assets as replaceable individual entities. If this principle were carried out logically, any replacement that would yield in earnings more than the capitalized value of its cost should be entered on the books at more than cost: that is, if the old machine cost \$1,000 and earned \$60, but the new cost \$1,200 and would earn \$75, the charge should be \$1,000 to Maintenance and \$250 to assets, with a credit of \$1,200 to Cash and \$50 to Surplus (or some other gain account); for the earnings of the new are one-fourth greater than those of the old and hence the capitalized value should be one-fourth greater. In practice, however, those who use this basis usually hesitate to charge to capital more than cost. If, then, our policy is to replace one machine a year and charge the replacement to Maintenance, the purchase of a \$1,200 machine to replace one costing \$1,000 is wholly chargeable to Maintenance when the machine will earn no more, is chargeable \$1,000 to Maintenance and \$200 to the asset account when the machine will earn one-fifth more (or more than one-fifth more), and is chargeable somewhat more than \$1,000 to Maintenance and somewhat less than \$200 to the asset account when the earning capacity is greater but not one-fifth greater.

**The Futility of the Earning-Capacity Basis.** Just as with the duplication basis, the effort is not worth the trouble. Earning capacity is constantly changing. Either a part of the assets (those recently acquired) will be on an earning-capacity basis and



the others will not (at least not on a basis of present earning capacity), or all values must be readjusted at each balance-sheet day to present earnings. Not only is this an enormous task for each piece of property, but it is fruitless; for the earning capacity of the whole business is what one chiefly desires and that is already shown by the income sheets. Any one who knows very elementary arithmetic can give a capitalized value if he knows the rate to use and the gain as shown by the income sheet. Even if one were to show such a value on the books, moreover, it would be almost immediately a dead letter. Thus with the earning-capacity basis as well as with the cost-of-duplication basis we find the task of keeping the accounts not only laborious and confusing, but futile, for the information finally incorporated in the balance sheet can be got as well without these bases as with them; hence these bases should be abandoned if any better basis can be found.

**The Balance Sheet and Actual Costs.** We have seen the futility of the balance sheet as direct indicator of solvency, as direct indicator of credit standing, as indicator of cost of duplication, as indicator of earning capacity. In every one of these cases attempt to make the balance sheet serve the function indicated makes much labor, confuses operating figures, and finally leaves the function no better performed than if the attempt had not been made through the balance sheet at all. The remaining suggested function of the balance sheet is to show what the proprietors of the business have now invested in various forms of assets, irrespective of present selling or duplication values and of earnings. This is done by what is called the "actual-cost basis."

**The Application of the Actual-Cost Basis.** Unlike the other two bases, the actual-cost basis gives us a definite thing, a matter of available knowledge independent of external fluctuations, and it involves no extra work of entry — that is, the natural entry is that on the cost basis. Reverting to our illustration of annual replacement of one machine for maintenance, if a worn-out \$1,000 machine is replaced by a new one costing \$1,200, we are not concerned with any question about the productivity of the new machine, or about its earning capacity, or about the cost of the old machine which it replaces: we are concerned solely with the cost of the new and its relation to maintenance. We have already

determined that wear and tear amounts to \$1,000 a year for this group of machines. Since the new machine costs \$1,200, we have replaced the wear and tear and have added to our investment \$200. So we debit Maintenance \$1,000 and the asset account \$200. This is in accord with the historical facts, moreover: our former investment was \$1,000, and our present investment \$1,200 as the books show. If the new machine for replacement cost only \$800, we should charge Maintenance \$800 only and Depreciation \$200 — the latter having for its complement either a writing down of the asset account or an increase in the Allowance for Depreciation; and this would be true whatever its earning capacity, for we have failed by \$200 to replace the wear and tear.

**The Value of the Actual-Cost Basis.** The cost basis gives us historical facts. The asset accounts represent on this basis what the proprietors have in the business — what they have actually put in and have not yet got out by withdrawal, or by depreciation or other conversion. Under this method the balance sheet has unity — all figures are on the same basis, and need no adjustment for changes in market prices or in earning capacity. Since the cost basis gives a figure not only historically worth while but unobtainable except from accounts kept strictly on the actual-cost basis, it is the logical method.

**An Illustration.** Let us examine by a few cases the working of the actual-cost basis. We will suppose that (1) a machine cost originally \$500; (2) its estimated life was four and a half years and its scrap value was estimated at \$50, so that depreciation was put at \$100 a year; (3) it now stands on the books, which were adjusted six months ago and four years after the machine was bought, at \$100; (4) we now abandon the machine and exchange it for a new one, just like it, costing \$500, but we get an allowance of \$50 for the old one. This is virtually the simplest possible case. The books now show \$100 for the old machine, and when we have installed the new they should show \$500. The cash which we pay, however, is only \$450. The simplest entry is to debit the asset account \$400 (to get it at \$500), debit Maintenance \$50 (for the half-year's depreciation which has not been written off but is now offset), and credit Cash \$450. We may, however, if we prefer, first debit Depreciation for the six months' loss of value, and then

charge the asset account (or the allowance) for the full \$450 restored (for the \$50 scrap value never disappears but merely changes its form from the old machine to the new). If, however, we change our supposition and suppose the new machine to cost \$600 (\$550 in cash plus the surrender of the old), we shall charge the asset account \$500, to raise it from the \$100 at which it now stands to \$600 (for our investment is now \$600), and Maintenance \$50. We do not need to look at anything but the plain facts of the case, uninfluenced by considerations of earning capacity or previous market value: we merely charge Maintenance for the replacement of shrinkage of value since the books were last adjusted, and charge the asset account for the rest of our payment. The fact that the old machine cost \$500 does not enter into our consciousness at the time of making the entry; for that has been taken care of automatically by the depreciation charges of other years. If we now buy the new machine for \$400 (\$350 cash), our debit to Maintenance is \$50 as before, but our debit to the asset account is but \$300. This automatically puts the asset on the books at \$400, which is what we now have in the machinery.

**A Second Illustration.** Suppose a case similar to the above except that when the property has been held for two years and has been depreciated to \$300 only, a change in the demand for commodities throws this machine out of use and it is replaced by another costing \$500 (\$450 cash and \$50 allowance for the old machine). Shall the machinery stand now on the books at \$750 or at \$500: shall the cost of the new be added to the book value of the old, or shall the old be written down to scrap value before the new is added? The old machine has had its turn, it has done its work — not, to be sure, the work expected of it but the only work available for it to do: the depreciation and obsolescence on it are chargeable to its product and hence no longer represent investment. The neglect to allow enough depreciation in the two years was an error in judgment (such as all business is subject to) and must now be compensated for by a retroactive charge against surplus or some similar account, as will be discussed in the next chapter; and it should not be carried in the asset account even on the actual-cost basis, for as things turned out the depreciation was suffered for the product of two years. The entry for replace-



ment would then be a debit to Surplus for \$250 (to correct the estimate of life of the old machine), and to the asset account for \$200 (to increase it to the cost of the new machine), and a credit to Cash for \$450. Losses of property from operation should be recognized on the balance sheet by a reduction in the accounts representing the assets lost, just as the losses will show on the income sheet and in the reduction in proprietors' accounts.

**Another Illustration.** Suppose, finally, at the end of two years of the life of the machine, when it has been depreciated to \$300 as in the last case, the legislature passes a law forbidding the use of this machine because (on account of the carelessness of employees) it has been found generally dangerous in use (though we have taken such precautions that we have had no accidents). We now are forced to abandon it and to buy another, perhaps costing \$600. Shall the cost of the new be added to the unrecovered value of the old, making the ledger figure \$900, or shall the new stand at \$600, with the other \$300 charged to Surplus or some similar account provided for emergencies? It should in any case be clear that the \$300 shrinkage in value because of the act of the legislature is not chargeable to the current period alone. What is the actual amount of the present investment? It is the unrecovered value of the old machine, \$300, plus the additional payment for the new, \$600; for the investment of the proprietors has never been wholly recoverable from the old. The facts regarding the old are now different from those under our second case. In the second case the natural course of events shortened the life of the machine, and therefore increased the charge for each year of its use, and the invested capital had its opportunity to recoup itself in the product through conversion. If it did not do so, the business showed a loss, as it should. In this third case, however, the business was prevented by causes external to the natural course of events from recovering its capital through conversion: capital put in was rendered unrecoverable not by the operations of business, which the capital was invested to endure, but by legislative interference. A part of the capital has never been got out, and hence as actual cost it is still there — though as salable assets it no longer exists. This is what is meant by the actual-cost basis — what has been put into assets and has not yet been withdrawn or utilized in operations.

**Actual-Cost Basis Misused.** As all accounting is matter for judgment and not for rules of thumb, care must be taken not to abuse the actual-cost basis and deem to be cost what is not cost. The last two cases given occupy border territory, and it is easy to say that if the replacement is not to be capitalized when it is necessitated by a change in customs of the public, it should not be capitalized when it is necessitated by an act of legislation. In each case the failure to get the expected use out of the machinery was due to a cause outside of the business itself: but in the first of these cases it was in accord with the very nature of business and was one of the elements of cost of operations (as obsolescence always is); and in the other case it was an abnormal interference with the natural laws of this business (for, by supposition, in this establishment the protection of employees did not require it, though it may have been generally required) by which the public, through its representatives, without sufficient warning prevented this business from utilizing to the full its former capital and thus required of it more capital — a proper ground for an increased charge to capital as indicating what the proprietors now have as investment in the business. This is very different, however, from defending the capitalization of costs unduly high because of carelessness or fraud. By “actual cost” in this connection is meant actual cost of what is got — but if through carelessness or fraud payment is made for more than was got, the excess payment is not cost at all, and should not be charged to capital. If, on the other hand, the best obtainable judgment was employed and no neglect or fraud was involved on the part of those responsible for the work or purchase, the payment constitutes actual cost and may on this basis be charged to capital, even though later events show that some innocent bad judgment was used. In one sense we may say that the purpose of the actual-cost basis is to show the proprietors their actual investment so that they may judge whether their profits are reasonable. They could hardly expect a return in the form of profits on money which they had thrown away by carelessness or fraud; but they can expect a reasonable return on investment which the public by legislation has prevented them from utilizing to full conversion. Losses from operation, too, should not be confused with investment and transferred as cost of

assets; for though it is true that, if the owners of the business have suffered losses (or even profits lower than normal), they may expect to have these recouped and may consider them a sort of claim on the future, the place to look for profits or losses is not the balance sheet, but the income sheet, and inadequacy of returns on investment should not be consolidated with actual cost of investment — especially since difference of opinion may exist as to what constitutes adequate return, and matters of opinion should not be consolidated in the same accounts with matters of fact.

— **Common Ground of the Three Bases.** It should be noted that the common sort of transaction requires the same treatment under all three bases of capitalization. Under normal economic conditions, most replacements when they exceed in actual cost the property replaced bring both increased earning capacity and increased duplication value, and then no problem arises. That is why, as a matter of fact, one should be alert to follow a settled policy, lest in cases of difference one may by inadvertence make some entries on one basis and others on another, thus producing accounts that as a whole mean neither one thing nor another.

**Public Interest in Capitalization.** Of late years much public discussion has sprung up over the bases of capitalization, for most states have passed laws for the regulation of the charges of public-service corporations and question arises as to the basis for reasonable rates. All three of the bases of capitalization just discussed, to say nothing of variants and combinations of them, have been used for determining reasonable rates. It should be observed, however, that the purpose of accounting is quite as much to furnish a guide for the operation of the business as to furnish a basis for reasonable rates; and as we have seen already that both cost of duplication and earning capacity can be learned as well when they are not used as the basis of the accounting as when they are so used, the purposes of rate-making cannot require them on books of account. The choice between bases for rate making is a matter of public policy rather than of accounting. Allied to it is the public interest in the question as to whether rates should be based on original value of property or on depreciated value, which again is a matter of public policy rather than of accounting. For both of these important matters, however, accounting



must furnish the facts on which a decision is reached, for justice cannot be assured without a knowledge of what has actually happened.

**Depreciation of Merchandise.** Our discussion of depreciation up to this point has used more or less fixed assets for illustration — assets not exhausted with one use. One should realize that merchandise and other property acquired for early sale but carried over from one period to another raise new considerations. When the same merchandise is carried over several periods, it is subject to the sort of depreciation that we have been discussing — gradual deterioration by shop wear or handling, and obsolescence. When it is carried over only from one period to the next (as some must be carried unless one is to discontinue business at least temporarily at the end of each earning period), depreciation may sometimes be taken once for all and never recur. Suppose we begin business with a new stock of goods costing \$30,000 and replenish it as fast as sold, and therefore at the end of the period have an inventory (at cost prices) of \$30,000. Some of this stock is deteriorated, of course, at least slightly, for in order to satisfy customers we must carry more varieties of stock than are actually called for and the uncalled-for items become obsolete or shop-worn. Suppose we debit Depreciation of Merchandise \$1,000, and credit Allowance for Depreciation of Merchandise, to cover this deterioration. The Depreciation will be closed to the clearing account. Suppose for the next period we do as before and again have an inventory at cost prices of \$30,000. What shall we do about depreciation? Shall we make another debit for \$1,000? If so, we shall have an allowance of \$2,000 on a stock of \$30,000, whereas a year ago we had an allowance of only \$1,000 on a stock of \$30,000. Do we need more now than then? Not unless the stock is poorer than it was at the end of the last period, which is contrary to our supposition. Then we are in error. We do not need any depreciation for the second period. We have maintained our stock at the average age that it had before; but we have not charged anything to Maintenance, because maintenance is automatically taken care of through purchases. A part of our purchases replaces the value of goods sold, and a part replaces the depreciation on goods not sold. Only in case the condition of

deterioration of stock is worse, or in case an increase in the total stock carried requires a larger allowance, is a charge for depreciation necessary a second time: maintenance has prevented depreciation. If, on the other hand, less allowance is necessary because the stock is less deteriorated or is smaller, a debit may be made to the Allowance for Depreciation of Merchandise, reducing it. This necessitates a very careful handling of the allowance account, the complementary account, and the clearing account for merchandise, producing a complication too confusing to be worth study here. The escape from this confusion is to avoid any allowance for depreciation of merchandise and to carry the inventory at depreciated value only. Indeed, since the merchandise is intended for quick conversion, the establishment of an allowance is usually an unnecessary statistical refinement.

### QUESTIONS AND PROBLEMS

1. The balance sheet of a business is as follows:

Real Estate	\$10,000	Proprietor	\$25,000
Accts. Receivable	20,000	Accts. Payable	18,000
Merchandise	14,000	Profits	6,000
Cash	5,000		
	<u>\$49,000</u>		<u>\$49,000</u>

Competent engineers estimate that an annual expenditure of \$1,000 will offset wear and tear and obsolescence of real estate. Assuming that there are no changes in the business except those resulting from the policy respecting real estate as indicated below (for there are no profits or losses), show journal entries and the balance sheets for each of the following. Do not write down the plant.

- (a) In the first year \$1,000 is spent for maintenance.
  - (b) In the second year \$500 is spent for maintenance, and \$500 in cash is set aside as a depreciation fund.
  - (c) In the third year \$1,200 is spent for maintenance, and the real estate is then found to be in its original condition and of its original value.
2. A business bought property for \$3,000, and estimated the annual charge for maintenance at \$300. During the first year it spent \$300 for maintenance. During the second, it spent only \$200. During the third, it spent \$400. Below under *A* is the way the accountant handled the items. Under *B* is the way the manager told him the accounts should have read. Decide between them, compromise, or suggest another way, as you see fit.

<i>A</i>				<i>B</i>			
<i>Bal. Sheet</i>				<i>Bal. Sheet</i>			
Beginning	Property	\$3,000		Beginning	Property	\$3,000	
1 year later	"	3,000		1 year later	"	3,000	
2 years	"	2,900		2 years	{ Property	3,000	
3	"	3,000			{ Res. Deprec.	100	
				3	"	Property	3,000
<i>Income Sheet</i>				<i>Income Sheet</i>			
1st year	Maint.	\$300		1st year	Maint.	\$300	
2d	{ Maint.	200		2d	"	200	
	{ Deprec.	100		3d	"	400	
3d	Maint.	300					

3. The wear and tear of equipment was estimated to be \$1,500 annually, and no reason has been found for questioning the accuracy of the figures. In 1916 the amount spent on repairs and replacements was \$1,200, in 1917 it was \$1,600, in 1918 it was \$1,300.

The several income sheets showed charges with respect to wear and tear of equipment as follows:

<i>1916</i>			
Maintenance		1,200	
Depreciation		300	1,500
<i>1917</i>			
Maintenance		1,500	1,500
<i>1918</i>			
Maintenance		1,300	
Depreciation		200	1,500

The several balance sheets were as follows:

	<i>Resources</i>			
	<i>1/1/1916</i>	<i>1/1/1917</i>	<i>1/1/1918</i>	<i>1/1/1919</i>
Equipment	20,000	20,000	20,100	19,600
Receivables	45,000	45,000	45,000	45,000
Other Assets	15,000	15,000	14,900	15,100
	<u>80,000</u>	<u>80,000</u>	<u>80,000</u>	<u>79,700</u>

	<i>Liabilities</i>			
	<i>1/1/1916</i>	<i>1/1/1917</i>	<i>1/1/1918</i>	<i>1/1/1919</i>
Capital Stock	50,000	50,000	50,000	50,000
Payables	30,000	29,700	29,700	29,700
Allowance Deprec,		300	300	
	<u>80,000</u>	<u>80,000</u>	<u>80,000</u>	<u>79,700</u>

Assume that all profits made have been distributed in dividends.

- (a) Are the income-sheet figures, as given, correct? If not, show what for any year they should be.

[Problem continued on next page.]



(b) Are the balance-sheet figures consistent with *your* income-sheet figures (after you have corrected any errors in the income sheet)? If not, show what they should be; but do not change any figures for mere preference of form; change them only if they are actually inconsistent with your figures. If they are correct as they stand, show how the figures for 1/1/1917 were obtained from those of 1/1/1916, and those of 1/1/1919 from those of 1/1/1918.

4. A corporation has been for years charging to revenue what it might properly have charged to capital, and consequently has accumulated a large secret reserve, in the form of assets not shown on the books, and shows no surplus on the books. These assets have been currently invested in additional machinery. The income tax authorities discover this, and assess back taxes on the unrevealed income.

What entries should be made now for the payment of the taxes and to correct the books and to protect the corporation against future accusation of attempt to defraud the government?

5. On closing the books at the end of the year, which of the following should you carry to revenue and which to capital accounts? Give your reasons.

(a) A sign costing \$250 painted on the outside walls of a building leased under tenancy at will.

(b) Repairs costing \$1,000 on a building two years old which had not been previously repaired but was depreciated on the books a year ago for \$500, assuming that the building is now restored to its original state.

(c) A rebate allowed you on February 1 for a defect found by you in goods bought on December 15 and still on hand.

(d) A dictating-machine system costing \$350 which eliminates the need of one of three stenographers who receives a yearly salary of \$1,000.

(e) Services of a special watchman during a period of strike riots.

(f) A charge of \$2,000 for enlarging a factory in compliance with a new building law requiring a fixed amount of space per employee, if the enlarged building accommodates no additional productive power.

6. Show entries for the following purchase, using each of the three bases of capitalization.

An office automobile is purchased for \$2,000 to replace an old automobile, of the same make and model, when the old cost \$1,500, is on the books at \$500, and has an exchange value of \$200 as part of the purchase price of the new.

7. A machine which costs \$200 is estimated to have a life of five years, at the end of which it will have a scrap value of \$20. Show how much the machine would be depreciated each year

(a) by the straight-line method

(b) by the reducing-balance method (the percentage is roughly 37)

(c) by the reducing-fraction method

In calculating, disregard cents except for finding the nearer dollar.

## CHAPTER XIX

### THE DISPOSITION OF PROFITS

**Summary of Previous Discussion.** We have already observed that profits cannot begin until all costs going into the conversions from which the profits were derived have been provided for, and that costs include not only the obvious cash outlay for current expenses but commonly outlay of other things than cash; that care must be taken not only that all outlay properly belonging to the period in question be included in the cost of product, but that outlay which produces its effect beyond the current period be not counted as a cost wholly of the current period; and that income also may need analysis to see whether more or less than the apparent income of the period is actually properly creditable to that period.

**Confusion of Cost with Disposition of Profits.** The first need of proper accounting for profits is a realization that disposition of profits may easily be confused with costs, and that one of the two most important things in accounting is the correct statement of profits and their disposition. Let us take a simple illustration. Suppose a business has been for twelve years providing what it has deemed adequate depreciation for its machinery but now finds that the machinery is obsolete and must be replaced. Suppose the allowance for depreciation was on a fifteen-year basis, and the original cost of the machinery was \$180,000. Then the actual annual charge for depreciation was \$12,000 ( $\$180,000 \div 15$ ), but now we find it should have been \$15,000 ( $\$180,000 \div 12$ ). Suppose also that the profits of this year on the strength of a \$12,000 charge for depreciation would have been \$50,000; but now that we see that the annual charge for depreciation should be \$15,000, we take the actual profits at \$47,000 (\$3,000 less than before). Is this correct? What of the eleven years past when we charged depreciation only \$12,000 annually but should have charged \$15,000? Supposing we have accumulated no surplus but have distributed all reported earnings as dividends, must not this \$33,000 of neglected depreciation be charged to this year? If

so, the profits of the year are reduced to \$14,000 (the previously given \$47,000 less \$33,000 correction for neglected depreciation). This would give an absolutely false statement. The neglect of adequate depreciation in past years has nothing to do with the profits of this year: only the proper depreciation of this year can affect this year's profits — which are \$47,000. Yet if there is no surplus out of which to take the \$33,000 neglected depreciation of the past, must it not come out of this year's profits? Not in the sense of reducing those profits, for their reality is unaffected by that neglected depreciation; but the disposition of that \$47,000 may be much affected by the neglected depreciation. Unless the company has more working capital than it needs, or is willing and able to borrow (thus conducting business more largely than heretofore with other people's money), it must withhold a part of the profits from distribution as dividends and apply them to replacing its depleted capital — and we know that the capital has been depleted, for all previous supposed profits have been distributed (else there would now be a surplus), and a part of those supposed profits were not profits but capital. If the company decides to withhold the \$33,000 from dividends, it will show the \$47,000 on the income sheet as profit of the year, and then show the application of \$33,000 of it to the correction of errors of past years. If it decides to distribute the profits of the year in spite of the error of former years, it must now show a deficit — due to the disappearance of assets, or to the payment of dividends in past years in excess of earnings.

**Account for Disposition of Profits.** The illustration of the preceding paragraph suggests the desirability of establishing a clearing account particularly for the disposition of profits. We have already seen that a clearing account, Net Income, may well gather together all sources of income, from different fields of activity, and set off against them the results in fields that produced loss, so that the balance of this account shall show final net income from all sources. This may well be closed to Disposition of Income. This method is preferable to showing distributions directly on Net Income; for in the latter case the debits to Net Income may include both losses from certain activities and disposition of profits, and it is desirable to run no risk of confu-



sion between them. In our illustration of the preceding paragraph, Disposition of Income would be credited for \$47,000 from Net Income, and would be debited for \$33,000 for the depreciation previously neglected. The complementary credit for this \$33,000 would be Machinery, or Allowance for Depreciation of Machinery. Then all the facts of the case will appear on the books and will be available for the statements. If, on the other hand, the company decides to distribute the profits of the year in spite of the deficit of past years just discovered, it will debit Disposition of Income for the dividend declared and credit Dividends Declared; but it must also debit Deficit and credit either Machinery or Allowance for Depreciation of Machinery.

**Numerous Applications of Profits.** That the applications to which profits may be put are numerous has already been suggested by the various accounts discussed in the last part of the chapter on the peculiarities of corporation accounts. These we directly observed: Dividends, Undivided Profits, Surplus, and Special Surpluses. It is obvious, moreover, that profits may be applied not only to accumulation for the future but to offsetting deficits of the past, as just discussed in the preceding two paragraphs. Sometimes those deficits are newly discovered and so are not on the books, as we have seen, and sometimes they may have stood long on the books awaiting final disposition. Of such possible deficits we have already seen Discount on Stock Issued, Operating Deficit, Capital Losses. We have also observed that theoretically income taxes are a division of profits with the government, and may be treated as disposition of income, though in the point of view of the individual enterprise they are costs and may be deducted from earnings before profits are found. Of most of these dispositions of income little is to be said, for they are obvious enough. They constitute merely either subdivisions of proprietorship profit or application of current profit to offset previous deficits; and it should be clear that a deficit is merely the statement of the excess of capital stock (or partners' credit) above the net assets. Only a deficit in excess of the sum of capital stock and surplus (for there may be an operating deficit coincidently with a capital surplus if the company does not wish to apply that surplus to that deficit) indicates insolvency — though

insolvency may actually occur when there is a net surplus, for assets may prove too hard to convert into funds acceptable for paying debt. Special surpluses, however, are so numerous and so varied, and occur under titles so little explanatory, that some of them need examination.

**Reserves.** Much confusion has arisen, in interpreting accounts, through the lack of any established practice with regard to provision for estimated present, as contrasted with possible future, losses and costs. In Chapter VIII we discussed Allowance for Depreciation, Allowance for Bad Debts, and Allowance for Discounts Offered, and suggested that such accounts are also called "Reserve for Depreciation," etc. It was pointed out then that the allowance represents the best estimate that can be made of the "hole" in the corresponding asset; but the measure of the hole is kept in a separate account, rather than deducted from the asset account, for statistical purposes. The measure of the overstatement of the asset is real, therefore, and is taken into consideration in determining profit and loss. The only element of uncertainty is the amount of the necessary allowance; and this is uncertain only because though the transaction involving the cost has already occurred, the result of it cannot be known until later when the property is worn out, or the debt becomes due, or the discount day comes around. Entirely different, however, is another kind of provision for the future. Besides costs that are normal and virtually inevitable, and that can be estimated, are losses which are extraordinary, subject to no regular recurrence, escaped altogether by many businesses and by many others for a generation or two at a time, and therefore without basis for calculation. The Allowance for Depreciation, Allowance for Bad Debts, etc., are intended to take care of normal, average, costs of this sort, on the principles of the law of chance; but such things as obsolescence, losses by bankruptcy, etc., though they fall on all businesses at an average rate (for that is just what we mean by average), as a matter of fact fall by mere chance more heavily on some than on others. Yet if they befall a business abnormally it may be put to its downfall unless it has specially prepared itself to endure. Provision should be made, not as a matter of accounting but as a matter of policy, for such occur-

rences. Accounting does not need to provide for them, for provision has already been made for the normal, the calculable costs of business. Policy, however, requires that out of profits be reserved from distribution as dividend something for this purpose — that is, a part of the assets, originating in profits which might have been distributed as dividends, be kept in the business ready to replace any assets lost through one of the mischances of bearing more than normal, or average, losses. Since there is danger that profits so retained be by inadvertence later distributed, thus abandoning the provision for bearing extraordinary losses, it is desirable to transfer the amount of such reservation from Undivided Profits or Surplus to a special surplus account with a title to indicate its purpose, as Reserve for Extraordinary Depreciation, Reserve for Extraordinary Losses from Bad Debts, Reserve for Fire Hazard, etc., as described on page 266. These titles may be said to put a red flag on certain profits, with the implication “Hands Off — For Emergency Only.” Unfortunately, however, the term “reserve” is so often in practice used for what we have above called an “allowance,” that one cannot in trying to interpret a balance sheet always know which is found unless one can find an interpreter. The practice seems to be growing, however, of applying the term “allowance” to a hole in the assets, and the term “reserve” to profits reserved as a safety provision.

**Sinking Funds.** One type of reserve has led to much curious confusion. It has not been uncommon for corporations to pledge themselves on the issue of bonds to establish a sinking fund that shall provide the means of paying at maturity the debt represented by the bonds. Commonly the sinking-fund provision requires that the sinking fund be accumulated out of income. A sinking fund, moreover, accumulates through the addition to it of interest earned on the investment already made in the fund. A part of the progression of such a fund established out of income is therefore as follows: (1) Disposition of Income is debited and Reserve for Sinking Fund is credited — thus labeling the profits, so to speak; (2) Bonds in Sinking Fund (or whatever account represents the form which the investment of the fund happens to take) is debited and Cash is credited; (3) Bonds in



Sinking Fund (or its substitute) is debited, and Reserve for Sinking Fund is credited — for the earnings of the fund and investment of them; (4) these processes continue until time for payment or until the fund is sufficient for its purpose; (5) Bonds Issued is debited, and Bonds in Sinking Fund is credited — to cover the application of the fund to the payment of the debt for which it was accumulated; (6) the net result of this is that Bonds in Sinking Fund and Bonds Issued are closed, but the Reserve for Sinking Fund remains. Here is where the confusion arises. We have built up a sinking fund, have used it for paying debt, and yet our fund appears to persist. In order to observe this, let us set up skeleton-ledger accounts, labeling the entries by numbers corresponding to those given above, adding at the start items for the property purchased with the proceeds of the bonds and for Bonds Issued (a), and for Disposition of Income (only so much of the income as will be applied to this use) and for Cash (b), using supposititious figures, and supposing one round of the cycle will sufficiently build up our fund.

PROPERTY		BONDS ISSUED	
(a) 210,000		(5) <u>210,000</u>	(a) <u>210,000</u>
DISPOSITION OF INCOME		CASH	
(1) <u>200,000</u>	(b) <u>200,000</u>	(b) <u>200,000</u>	(2) <u>200,000</u>
RESERVE FOR SINKING FUND		BONDS IN SINKING FUND	
	(1) 200,000	(2) 200,000	(5) 210,000
	(3) 10,000	(3) <u>10,000</u>	
		<u>210,000</u>	<u>210,000</u>

We end with a debit to Property and a credit to Reserve for Sinking Fund.

**Reserve for Sinking Fund.** What is the nature of this reserve for sinking fund? It was established as a reservation of profits against distribution of dividend; and of course when we reserve the profits we equally reserve from distribution the assets which constitute those profits — for the assets and the profits are two aspects of the same thing. Yet the assets seem to have disappeared but the profits seem to remain. If we were to take a balance sheet of the accounts shown above as they looked before

the earning of the profits which established the sinking fund, and then again as they look after the fund has served its purpose, we get an interesting contrast.

*Balance Sheet Before Profits Earned*

Property	\$210,000	Bonds Issued	\$210,000
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*Balance Sheet After Sinking Fund Used*

Property	\$210,000	Reserve for Sinking Fund	\$210,000
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What was the source of the property under the first balance sheet? Clearly a loan. Under the second? Clearly the reserve. How can we have eaten our cake and yet still have it? How can we have used the fund to pay our debt and still have the fund? The answer to these questions involves two fundamental business principles: we cannot use profit or reserve to pay debt, but we can pay debt by using the assets which are the complements of the profit or reserve; and we are never made poorer by paying debt, but have the same profit, reserve, surplus, after paying debt as before. The payment of debt, though it reduces assets, reduces liabilities; and so the net worth, or proprietorship, is unchanged by the process. If we had a reserve before, we have it now; but though we had the assets of the fund before, we have them no longer — at least in positive form; we still have them in negative form, however, for we have got rid of a debt. Our reserve was previously in the form of assets: it is now in the form of immunity from debt: and as one form is as good as the other, the reserve is as real as ever. What now shall we do with it? It is ridiculous to call it a “reserve for sinking fund” when we no longer have need for a sinking fund. We temporarily labeled it in such fashion as would show that we were complying with the terms of the sinking fund, and would force us to reserve sufficient profits for the purpose. The purpose has been served: the cash has been applied to the payment of debt and we are no longer in danger of using it for dividends: we may now take off the red flag of caution. We do this by debiting Reserve for Sinking Fund and crediting Surplus (providing we do not care to carry it to a special surplus). When this has been done, our balance sheet shows, as contrasted with the original balance sheet before the profits were earned, that whereas originally we held the property as, so to speak, bor-

rowed, we now hold it as earned. The surplus account now shows its final standing, as the bond account showed its original standing.

**Summary.** The substance of disposition of income may well be expressed in the form of a few skeleton-ledger accounts showing the source and disposition of profits in a supposititious case.

#### NET INCOME

Steamship Line	17,000	Trading	268,000
Commissary Department	21,000	Interest Earned	18,000
Disposition of Income	334,000	Rental Earned	22,000
		Commission Earned	64,000
	<u>372,000</u>		<u>372,000</u>

#### DISPOSITION OF INCOME

Reserve for Sinking Fund	16,000	Net Income	334,000
Reserve for Extraordinary Depreciation of Plant	8,000		
Reserve for Extraordinary Losses	17,000		
Subscription to Employees' Pension Fund	25,000		
Dividends	180,000		
Surplus	80,000		
Undivided Profits	8,000		
	<u>334,000</u>		<u>334,000</u>

#### SURPLUS

Allowance for Depreciation of Plant	18,000	Balance	283,000
Fire Loss	12,000	Allowance for Bad Debts	8,000
Appropriation for Research	16,000	Disposition of Income	80,000
Balance	<u>325,000</u>		
	<u>371,000</u>		<u>371,000</u>
		Balance	325,000

The other accounts involved need not be shown. Only a few items here need special comment. The first two items on the debit side of Net Income represent losses of particular activities, and the third is the balance of net income. The fourth debit to Disposition of Income represents a gift out of profits to the pension fund for employees. The subscription account was credited as a liability when this entry was made, and will be debited when payments are made. The first debit to Surplus is to correct insufficient allowance for depreciation in previous years, and hence



is not charged either against this year's operations or against Reserve for Extraordinary Depreciation. The next debit is for a fire loss in excess of the provision for fire loss. The next debit is for an appropriation out of accumulated profits for scientific research. The appropriation account was credited when this entry was made, and will be debited when expenditures are made. The first credit to Surplus, other than the balance, is for a correction of the allowance for bad debts made in an earlier period but now found unnecessary. The next item is for the portion of net income transferred to Surplus through Disposition of Income.

### QUESTIONS AND PROBLEMS

1. A business receives an award of \$100,000 and costs on a suit which has been pending for three years. (a) To what account should the receipt of the money for the costs of the suit be credited? (b) Is the \$100,000 award a profit? (c) How should the \$100,000 be treated on the books?
2. A business manufactured a year ago on contract goods which were rejected and thought unsalable because of a flaw. They were reduced on the books from cost (\$40,000) to scrap value (\$1,000). This year owing to changed conditions the goods became salable and were sold for \$20,000. What entry should be made for the sale, if (a) the loss a year ago was treated as a loss for the year, (b) it was not so treated?
3. What features of each of the following distinguish it from each of the others? An allowance, a reserve (as the term is used in this book), a provision, a reserve fund.
4. The *tentative* balance sheet of a corporation, which has distributed all its net income as dividends, but has retained \$10,000 of gross income to cover depreciation estimated at that amount, awaiting a decision of the directors as to the treatment of depreciation upon the books, is shown below:

Real Estate	\$100,000	Capital Stock	\$120,000
Cash	20,000	Gross Income (available to	
Other Assets	15,000	cover depreciation)	10,000
		Surplus	5,000
	<u>\$135,000</u>		<u>\$135,000</u>

Show how the balance sheet would look under each of the following policies:

- (a) Writing down the property, and
  - (1) Setting aside a fund in cash to cover depreciation.
  - (2) Not setting aside a fund.
- (b) Setting up an allowance of \$10,000, and creating a reserve of \$4,000 for future extraordinary depreciation.

5. The trial balance of a corporation, with certain additional information, is given below. Construct from the figures the accounts for merchandise, trading, net income, disposition of profits, and surplus; and show the balance sheet.

<i>Trial Balance</i>		
Capital Stock		150,000
Plant	141,350	
Notes Receivable	76,800	
Accounts Receivable	45,000	
Cash	28,130	
Notes Payable		75,000
Accounts Payable		12,500
Sales		160,500
Wages and Salaries	49,184	
Purchases	75,816	
Discounts Given	880	
Commission Earned		5,000
Selling Expense	10,000	
Taxes	620	
Insurance	310	
Interest	820	
Office Supplies	360	
Maintenance	2,220	
Surplus		37,500
Fire Loss	9,010	
	<u>440,500</u>	<u>440,500</u>

Wear and tear for the year is estimated at \$2,500; the merchandise on hand cost \$25,000, but has a present market value of \$20,000; debt loss estimated is \$2,000; a provision for fire loss of \$1,500 is made; dividends of 7% are declared; \$11,500 is reserved for income taxes; \$12,000 of income is carried to surplus; \$2,000 is reserved for depreciation; cash is set aside in a special fund to cover the reserve for depreciation; it is decided not to charge to the year the fire loss now on the books.

## CHAPTER XX

### THE INTERPRETATION OF FINANCIAL STATEMENTS

**Uncertain Standards of Measurement.** We have already several times observed the lack of uniformity of method in accounts. This is due not only to differences of accounting policy, but to differences of judgment about values. Much accounting is more a matter of judgment than of application of predetermined fixed standards. For instance, the choice of a basis of capitalization is a matter of accounting policy, and might be fixed by custom or by law; but even if that were fixed and universally adopted, differences of judgment regarding rates of depreciation, allowances for bad debts, etc., would remain, and accounts would reflect those differences. In any case, then, one must interpret accounts with knowledge not only of the policy but of the sort of judgment that is behind them. When these things cannot be learned, one takes the accounts with "a grain of salt," for safety's sake. Theoretically, a balance sheet is, as we have seen, a statement of assets and liabilities — provided we take proprietorship as a liability of the business to its owners; but an asset for the purpose of paying debts through the liquidation process is very different from an asset for the purpose of conducting a going business, and each of these may be very different from an asset as a means of explaining what has become of an owner's investment. What we can most profitably use is usually information regarding the convertible value of the current assets, the current liabilities, the cost of the fixed assets, and the long-term liabilities: we wish to compare the convertible value of current assets with current liabilities, in order to see the probability of payment at maturity; and we wish to compare the cost of fixed assets with the long-time liabilities, for we wish to see how much of the investment in fixed property has been borrowed and how much is invested by the proprietors out of their own funds. If the balance sheet has not been constructed on this plan, interpretation of it should adjust for these elements, so that in the end a statement of assets and liabilities can be drawn up — either formally or by mental adjustment in reading the balance sheet. In general, the accounting methods defended in the preceding chapters provide for such adjustments — current assets for sale taken at cost or mar-



ket, whichever is lower, current assets for collection taken at estimated collectibility, and agents of production (both fixed assets, and materials for production and service) taken at cost. When this is done we preserve all the information that the business needs for historical record, and have a definite point of departure for making allowances and adjustments in converting the balance sheet into a statement of realizable assets and payable liabilities as a test of either ultimate or immediate solvency.

**Ultimate and Immediate Solvency.** Many a business has gone through insolvency and yet paid "one hundred cents on the dollar" without new earnings. It was insolvent immediately but not insolvent ultimately. Its assets were as great as its liabilities, but its assets were not convertible into cash as fast as the liabilities demanded cash. Accounts receivable amounting to one hundred thousand dollars if collectible in two months will not pay accounts payable of ten thousand dollars if due in one month — unless they can be used as security for borrowing. So a balance sheet is not a wholly satisfactory statement of solvency even when all figures are adjusted to actual collectibility. The element of time must be added. In other words, a balance sheet at best can serve only as a basis for a statement of assets and liabilities, and to try to make it do anything else is largely to spoil its value for what it might do wholly well.

**A Statement of Assets and Liabilities.** For purposes of showing solvency the best form of statement is based upon the balance sheet and shows on its face that it is not inconsistent with that sheet. No standard form is available, for no two businesses and no two times in the same business would require the same form. Let us from the balance sheet shown below, for example, construct a supposititious statement of assets and liabilities.

*Balance Sheet*

Cash	\$ 7,000	Notes Payable	\$ 20,000
Accounts Receivable	128,000	Mortgage Notes Payable	15,000
Merchandise	116,000	Accounts Payable	140,000
Furniture & Fixtures	2,500	Accrued Liabilities	17,000
Real Estate	25,000	Allowance for Depreciation of	
Allowance for Discounts Avail-		Real Estate	4,000
able	4,000	Allowance for Bad Debts	2,500
		Allowance for Discounts Offered	3,000
		John Doe (Permanent Loan)	30,000
		Proprietor	51,000
	<u>\$282,500</u>		<u>\$282,500</u>

The first step in showing assets and liabilities in such form that judgment of solvency is easy is to analyze those items that are not all of a sort — that is, separate into classes those that are not all applicable to the same thing at the same time. This means reconstructing our balance sheet as a whole so that in the proof of debits and credits we may be sure that we have not lost track of anything. We must show, for example, that our accounts receivable consist not only of sums collectible at different times, but of sums not collectible at all and shown as contra items on the balance sheet. Yet, for the sake of showing both the real value and the book figures, we show the contra items on both sides of our statement (thus in a sense padding both sides together) rather than subtract contra items. The analyzed balance sheet follows.

### Analyzed Balance Sheet

Cash		\$7,000	Notes Payable		
Accounts Receivable			Due in		
Estimated collections in			first month	\$ 5,000	
first month	\$67,000		second month	<u>15,000</u>	\$20,000
second month	45,000		Mortgage Notes Payable		
third month	8,000		(contra)		15,000
later	2,500		Accounts Payable		
Estimated discounts (contra)	3,000		Due in		
Estimated losses (contra)	<u>2,500</u>	128,000	first month	\$70,000	
Merchandise			second month	40,000	
Estimated converted by			third month	26,000	
cash sales in			Discounts available (contra)	<u>4,000</u>	140,000
first month	\$40,000		Accrued liabilities		
second month	20,000		Due in first month		17,000
third month	10,000		Allowance Depreciation R. E.		
Estimated converted by			(contra)		4,000
charge sales in			Allowance Bad Debts		
second month	15,000		(contra)		2,500
third month	15,000		Allowance Discounts Offered		
later	<u>16,000</u>	116,000	(contra)		3,000
Furniture and Fixtures		2,500	John Doe		30,000
Real Estate			Proprietor		<u>51,000</u>
Applicable on Mortgage					
Notes Payable (contra)	\$15,000				
Allowance for Depreciation					
(contra)	4,000				
Balance, equity	<u>6,000</u>	25,000			
Allowance Disc't. Available					
(contra)		<u>4,000</u>			
		<u>\$282,500</u>			<u>\$282,500</u>

We have next to relate the various items of assets and liabilities to each other in such a way that we may see how far the former will take care of the latter — on the supposition that the business continues and proceeds to convert the naturally convertible assets, but without taking into account any new business (or profits) other than naturally liquidating the old. The sheet following does not show the estimated status of the business in the

new period, for that would be entirely outside the scope of this sort of statement; it shows merely how the present assets and liabilities will stand with respect to each other as they follow natural progression; and thus we may see whether the assets will automatically take care of the liabilities and not require assistance from the new period.

*Statement of Assets and Liabilities*

<i>Assets</i>		<i>Liabilities</i>	
Cash	\$ 7,000	Notes Payable due in first month	\$ 5,000
Accounts Receivable, estimated collections in first month	67,000	Accounts Payable due in first month	70,000
Merchandise, recent average cash sales in one month	40,000	Accrued Liabilities due in first month	17,000
		Liabilities due in first month	\$92,000
		Balance of assets available in first month	22,000
Assets available in first month	<u>\$114,000</u>		<u>\$114,000</u>
Balance from first month	\$22,000	Notes Payable, due in second month	\$15,000
Accounts Receivable, estimated collections in second month from present Accounts Receivable	45,000	Accounts Payable, due in second month	40,000
Merchandise, estimated cash sales in second month, from present stock	20,000	Liabilities due in second month	\$55,000
Merchandise, estimated collections in second month from charge sales made from present stock, based on average payments on sales	15,000	Balance of assets available in second month	47,000
Assets available in second month	<u>\$102,000</u>		<u>\$102,000</u>
Balance from second month	\$47,000	Accounts Payable, due in third month	\$26,000
Accounts Receivable, estimated collections in third month	8,000	Liabilities due in third month	\$26,000
Merchandise, estimated cash sales in third month, from present stock	10,000	Balance of assets available in third month	54,000
Merchandise, estimated collections in third month from charge sales made from present stock, based on average payments on sales	15,000		
Assets available in third month	<u>\$80,000</u>		<u>\$80,000</u>
Balance of third month	\$54,000	John Doe, permanent loan	\$30,000
Balance of Accounts Receivable	2,500	Proprietor	51,000
Balance of Merchandise	16,000		
Furniture and Fixtures	2,500		
Real Estate	\$25,000		
Less Depreciation R. E.	4,000		
	<u>\$21,000</u>		
Less Mortgage Notes Payable	15,000		
	<u>6,000</u>		
	<u>\$81,000</u>		<u>\$81,000</u>

We here have a prospectus of the future history of present affairs, and from it we see that the future does not need to look out for anything but itself. Indeed, the present will provide certain resources for the future. The first month will convert into liquid form \$22,000 of assets more than will be needed for old debts, and as the second and the third month each more than takes care of itself, it is obvious that the excess of liquid assets of each month



may go back into the business for replenishing stock, etc. If such a statement is taken monthly the manager may know what buying, selling, and financial policy is wisest to adopt, and creditors who have access to the sheet may know fairly well what risks they are taking. As with all accounting statements, however, the value depends upon the correctness of the estimates; for all financial statements of businesses having a large body of salable and collectible items are only approximations to absolute final values. The last section of this statement does not attempt to show converted values except in the case of the mortgage note, for in no case is the conversion imperative. This section shows that the long-term creditors are protected, and shows where the proprietor's investment stands.

**Interpreting Individual Items of a Balance Sheet.** Most of the things that one should bear in mind in attempting to interpret a balance sheet have already been discussed in one connection or another, such as the need of realizing that accounts receivable and notes receivable will not often prove all good, that allowance for uncollectibility must be made, and that the size of the allowance depends on many things: many people are naturally optimistic and make allowances too small; but many businesses have a specially unreliable line of customers, and what may be a perfectly good allowance for bad debts in one business may be wholly inadequate in another business in the same line of trade in the same town at the same time. Anybody can sell goods if he is not particular whom he trusts. When it comes, moreover, to finding immediate solvency, we have seen that assets good for a continuing business must sometimes be sold for a song when the business is liquidated. One can learn what allowance to make for such things from experience only. They are not matters of accounting, but of judgment. One must realize, moreover, that values put on the books for one purpose are not to be interpreted as for another.

**The Form of Balance Sheets.** No standard form is recognized except in a few businesses either under government control or associated with other businesses of the same type to maintain uniform methods of accounting (for the purpose of mutual benefit through comparison of operations); and the forms determined as

standards by these various agencies have little in common. Indeed, as we have seen, the needs of different businesses are so widely variant that no standard form is generally acceptable. Only certain general principles can become standard.

**Order of Assets and Liabilities.** It used to be common, well-nigh universal, to arrange both assets and liabilities in order of permanence — real estate, machinery, etc., down through accounts receivable and merchandise to cash, and capital stock down to claims due and unpaid. Then the taste of accountants swung in the opposite direction and led to Cash as the first asset and Real Estate as the last. This is purely a matter of taste or emphasis. In the balance sheet above, on page 340, the latter order is used, because we are putting emphasis on the balance sheet as a statement of assets and liabilities for purposes of immediate solvency. If, however, the sheet were to be used primarily as a statement of costs and ownership, the natural order would be the reverse.

**Classification of Assets and Liabilities.** Whatever general order for items is adopted, it is desirable to arrange items either in groups suggesting permanence, or in groups suggesting solvency. A convenient grouping to suggest permanence follows:

Property Investment	Capital Stock
	Bonded Debt
Working Assets	Working Liabilities
Accrued Assets	Accrued Liabilities
Prepaid and Deferred Assets	Deferred Liabilities
	Surpluses
Contingent Assets	Contingent Liabilities

Here working assets include assets of quickly converted type but needed to keep the business going, like Cash, Merchandise, Supplies, and Accounts Receivable. A different grouping more clearly suggests solvency:

Current Assets	Current Liabilities
Accrued Assets	Accrued Liabilities
Prepaid and Deferred Assets	Deferred Liabilities
Securities Investment	Bonded Debt
Working Investment	Capital Stock
	Surpluses
Contingent Assets	Contingent Liabilities





**Special Designation of Specific Items.** The items must not be so vague as to serve as cover for misrepresentation. Often all sorts of odds and ends of debts due have been reported as cash items — such as bad checks still held in the cash drawer, I.O.U.'s, etc. To avoid suspicion of this, it is well to report details of cash. Sometimes branches and the main business have been intertwined; so that merchandise was counted in both places, and the debt due the main house by the branch for merchandise was counted as an account receivable to the main house but was not counted as an account payable by the branch. This resulted in counting the same asset twice. To show that this has not happened, it is well to designate the exact plan followed. Trust and other funds may well be designated not only as funds, but in a footnote as specific investments. Here the Liberty Bonds are shown as bought and carried at par; and hence even if they happen not to be worth par on the market at this time they discharge the liability for the trust shown on the opposite side of the balance sheet. It is also common to report contingent assets and liabilities in a footnote rather than in the body of the balance sheet.

**Finding Tendencies.** As a matter of fact, a single balance sheet is not nearly so serviceable for showing the condition of a company as two — in spite of the fact that the earlier one may have been long dead. Tendencies are often quite as important as momentary conditions, and often an important tendency will be shown by a comparison of two balance sheets. The easiest way to discover tendencies is to make a list of changes between two balance sheets and then observe whether the changes are in the right direction. A decrease in cash, for instance, is a bad thing if cash is sorely needed, but it is a good thing if cash is lying idle. An increase in accounts receivable is a good thing if it is due to increasing sales, but it is a bad thing if it is due to increasing uncollectibility of bills. Often tables of changes in balance sheets bring out prominently facts that were hardly observable from the balance sheets themselves, particularly when the figures are studied with figures from the operating statement.

**Summary of Balance-Sheet Changes.** It is obvious that a change in a balance-sheet figure of one time as compared with that of another time is due either to a transaction (or series of transac-

tions) which has changed the asset or ownership-claim, or to a mere change in the value attached to the item; and a change merely of valuation must change some other figure, because we are dealing in double entry. So every change between one balance sheet and the next is matched by another change, and therefore our summary of changes must itself balance — or consist of two equal parts. It is next obvious that transactions which offset each other will not appear on a summary of changes, for the net effect on the balance sheet is nothing at all. Let us see just what that means in practice. Suppose \$100,000 is collected in cash in the new year on old accounts receivable, and new sales of \$100,000 are still unpaid and therefore appear as accounts receivable; these transactions will produce no effect on Accounts Receivable, for the disappearance of an old \$100,000 cancels the creation of a new. If, again, the \$100,000 received on the old collections goes to buy merchandise and pay expenses involved in the sale of the new \$100,000, and these cost \$100,000, no change in cash appears in comparison of the two balance sheets. If, however, the goods and the expenses cost less than \$100,000, so that profit was made, and that profit made was distributed as dividends, the new balance sheet will show no change at all for these transactions as compared with the old. The succession of values under the supposition above will run as follows:

<i>Debits</i>	<i>Credits</i>	
Cash	Accts. Rec.	100,000
Mdse.	Cash (say)	80,000
Expenses	Cash (say)	10,000
Accts. Rec.	Mdse.	100,000
Loss and Gain	Expenses	10,000
Mdse.	Loss and Gain	20,000
Loss and Gain	Dividends	10,000
Dividends	Cash	10,000

Checking these up will show in the end no change in any account, and so no change on the balance sheet. In other words, when the operations not only produce no ultimate increase or decrease in assets but convert old assets into new assets of the same type, as in our illustrations above, they produce no effect on the balance sheet. Usually, however, operations not only produce a

change in total of net assets but also a change in the character of assets — for conversions are hardly likely exactly to replace themselves in kind. We will usually have more or less cash, more or less merchandise, more or less in accounts receivable and in accounts payable, even when the net assets are the same. The purpose of the summary of balance-sheet changes is to show just this, so that we may see whether we have more or less of the desirable things.

**Classification of Balance-Sheet Changes.** We have observed that the changes themselves must be in two sets, and in balance. This is not only mathematically reasonable but plain business common sense. If we have less of some type of asset than we had a year ago, we have more of some other asset, have paid off debt, have drawn out investment, or have suffered a loss; but these things also will show on the summary of changes. Our changes group themselves into two classes: debit changes, and credit changes. An addition to assets and a decrease in ownership-claims constitute debit changes, and a decrease in assets and an increase in ownership-claims constitute credit changes. Debit changes must equal credit changes — or else one of our balance sheets used for comparison is out of balance. It happens that debit changes always indicate what was done with values which were in possession, and credit changes indicate where values came from: for debit changes show either an increase in assets (putting values into the form shown by the balance sheet as increased), or a decrease in ownership-claims (paying off debt or withdrawing by owners); and credit changes show either reduction of assets (value converted out of the form shown by the earlier balance sheet), or an increase in ownership-claim (receiving value from loan, investment, or profit from operation). Debit changes, then, show what was done with values, destinations, and credit changes show where value came from, sources. Let us now take two abbreviated balance sheets of the same business, and tabulate the changes, labeling debit changes “application of values,” and credit changes “sources of values,” and carrying to “application of values” all increases of assets and decreases of ownership-claims, and to “sources of values” all decreases of values and increases of ownership-claims.



*Comparative Balance Sheets*

	Jan. 1, 1922	Jan. 1, 1923
Cash	\$12,400	\$ 5,900
Merchandise	64,000	93,000
Accounts Receivable	86,000	128,000
Raw Material	20,000	30,000
Goods-in-Process	40,000	50,000
Allowance for Discounts Available	2,600	2,100
Fixtures	3,000	2,000
Machinery	87,000	87,000
Real Estate	40,000	50,000
	<u>\$355,000</u>	<u>\$448,000</u>
Accounts Payable	\$ 69,000	\$ 53,000
Notes Payable	35,000	19,000
Accrued Liabilities	8,000	2,000
Allowance for Bad Debts	2,000	3,000
Allowance for Discounts Offered	3,000	4,000
Allowance for Depreciation	14,000	19,000
Provision for Fire Hazard	15,000	20,000
Capital Stock	200,000	250,000
Surplus	9,000	78,000
	<u>\$355,000</u>	<u>\$448,000</u>

In the table following, plus and minus signs are used, for convenience, in showing whether the change is one of increase or of decrease. All in the same column are to be added, however, whatever the sign used, for a decrease in a liability is just as much an application of value as is an increase in an asset.

*Summary of Balance-Sheet Changes*

<i>Application of values</i>		<i>Source of values</i>	
Merchandise (+)	\$29,000	Cash (—)	\$6,500
Accounts Receivable (+)	42,000	Allowance for Discounts Avail-	
Raw Material (+)	10,000	able (—)	500
Goods-in-Process (+)	10,000	Fixtures (—)	1,000
Real Estate (+)	10,000	Allowance for Bad Debts (+)	1,000
Accounts Payable (—)	16,000	Allowance for Discounts Of-	
Notes Payable (—)	16,000	fered (+)	1,000
Accrued Liabilities (—)	6,000	Allowance for Depreciation (+)	5,000
		Provision for Fire Hazard (+)	5,000
		Capital Stock (+)	50,000
		Surplus (+)	69,000
	<u>\$139,000</u>		<u>\$139,000</u>

The items of debit change are obvious enough. The first five show more values put into merchandise, accounts receivable, raw material, goods-in-process, and real estate, and the last three show a reduction of debt. On the credit side the first and the third item show a direct reduction of values — cash spent and fixtures either sold or depreciated. The second, representing a shrinkage in the hole in a liability, really increased the liability, and shows the source of values. The next four items show increased holes in the assets, and hence are a source of assets only in the mathematical sense: they are merely offsets to the overvaluation of assets, and might be deducted on the other side, but are kept here for convenience. The last two items constitute increases in proprietorship, the former probably by new investment, and the latter by profits — though the former may have originated in a stock dividend; we have no way from the balance sheet alone of determining this matter.

**Interpreting Balance-Sheet Changes.** On the face of things four changes stand out as favorable — the decline in accounts payable, notes payable, and accrued liabilities (showing not only willingness, but ability to get out of debt), and the increase of surplus (showing not only the ability but the willingness to accumulate a margin of safety). The cash decrease is apparently favorable unless payables are maturing more rapidly than receivables; for the former cash balance looked unnecessarily large for the apparent size of the business — which, however, we shall examine later in connection with the operating statement. The increases in merchandise, accounts receivable, raw material, goods-in-process, and real estate, we are not yet in a position to judge. These we will return to after we have seen the operating statement.

**The Form of Operating Statement.** The operating statement, like the balance sheet, has no standard form. The chief requirement is that it shall group items of a kind, show the relation between groups, and not introduce into any group items which confuse the relations of that group with any other. This was discussed in connection with clearing accounts in Chapter VIII. Below is shown an operating statement introducing virtually all the nominal accounts discussed in Chapter VIII. It also shows

the transactions for an earning period of the business for which two balance sheets were given in the preceding paragraph.

OPERATING STATEMENT, JANUARY 1, 1922 — DECEMBER 31, 1922

Sales				\$628,000
Less Returned Sales				<u>17,000</u>
Net sales				\$611,000
Less: Discounts Given			\$28,000	
Unexpired Discounts Offered			<u>4,000</u>	<u>32,000</u>
Net collectible from sales				\$579,000
Finished Goods Inventory, Jan. 1, 1922			\$64,000	
Goods-in-Process Inventory, Jan. 1, 1922		\$30,000	\$40,000	
Raw Material Inventory, Jan. 1, 1922				
Purchases Raw Material	\$168,000			
Less Returned Purchases	<u>7,000</u>			
Net purchases	\$161,000			
Less: Discounts Taken	\$4,400			
Unexpired Discs. Available	<u>2,100</u>	<u>6,500</u>		
Net cost of purchases			154,500	
Raw material handled			\$174,500	
Less Raw Material Inventory, Jan. 1, 1922			<u>30,000</u>	
Cost of raw material consumed				144,500
Wages	\$392,650			
Taxes	3,000			
Insurance Charges	8,000			
Depreciation	5,000			
Maintenance	9,000			
Supplies	39,000			
Fuel	3,000			
Light	750			
Janitor Service, etc.	2,800			
Freight and Cartage	4,900			
Interest Charges	2,300			
General Expenses	<u>3,600</u>			
Expenses distributable	<u>\$373,000</u>			
Share to manufacturing			281,000	
Cost of goods manufactured			\$465,500	
Less Goods-in-Process Inventory, Jan. 1, 1922			<u>50,000</u>	
Cost of goods finished				\$415,500
Finished goods handled			\$479,500	
Less Finished Goods Inventory, Jan. 1, 1922			<u>93,000</u>	
Cost of goods sold				386,500
Gross profit from sales				\$192,500
Less: Selling share of distributable expenses (\$373,000)	\$90,000			
Loss from Bad Debts	12,000			
Debt Loss Estimated	<u>3,000</u>			
Net profit from sales				105,000
Commission Earned			\$6,000	\$87,500
Less share of distributable expenses (\$373,000)			<u>2,000</u>	<u>4,000</u>
Net Income				\$91,500
Dividends				<u>22,500</u>
Surplus for the year				\$69,000

**Relation of Operating Statement and Balance Sheet.** One should remember that though the operating statement consists of nominal items and the balance sheet of real items, many items at least in name are common to both. As we saw in Chapter VII, the books are not kept complete currently, and at the time adjustments are made for closing the books many items of assets and liabilities must be entered for the first time or be adjusted; and adjustments always relate to converted items (or they would



not need adjustment), and the operating statement is merely a statement of converted items: so the process of closing the books may give us the item for both the balance sheet and the operating statement — the unconverted portion for the balance sheet, and the converted portion for the operating statement. Since, moreover, the conversions which do not cancel each other represent increase or decrease in proprietorship, they get upon the balance sheet in that form (as proprietors' claim to assets derived from profits, or shrinkage of claim because of losses): Here, for example, we have eleven items recognizable as common to the two sheets, and one item which would be recognizable if it were not a merger of several items for convenience. These follow in the order of their appearance on the operating statement: Unexpired Discounts Offered is a reduction of income on the operating statement, and the complementary credit is to Allowance for Discounts Offered, which appears on the second balance sheet; Finished Goods Inventory is twice on each set of figures — the inventory for Jan. 1, 1922, is credited to the old inventory account and is debited to the clearing account for Merchandise (thus getting on the operating statement), and the new inventory is debited to the new inventory account and is credited to the clearing account for Merchandise; Goods-in-Process, and Raw Material, similarly appear twice in each set of figures; Unexpired Discounts Available is a reduction of costs on the operating statement, and the complementary debit is to Allowance for Discounts Available, which appears on the second balance sheet; the accrued liabilities of \$2,000 shown at the end are for various expenses included in operating costs, but merged for convenience; Depreciation on the operating statement matches the increase in Allowance for Depreciation on the balance sheet — and this shows that the writing down of Fixtures on the balance sheet was due not to depreciation but to sale or exchange, for otherwise Depreciation would be debited \$6,000 (\$5,000 from the increase in the allowance and \$1,000 from the decrease in fixtures); Debt Loss Estimated is a cost on the operating statement, and the complementary credit is to Allowance for Bad Debts, which appears on the second balance sheet; Surplus on the operating statement is the final figure, measuring the excess of credits to nominal accounts over the debits to

nominal accounts, and hence the increase of proprietorship by conversions, added on the balance sheet to the previous surplus; and as the new assets and liabilities arising from the conversions have also been carried by adjustment to the balance sheet, as we have just seen, this brings both sides of the balance sheet into accord with the present status.

### **Relation of Balance-Sheet Changes and Operating Statement.**

We postponed discussion of the increase of Merchandise, Accounts Receivable, Raw Material, Goods-in-Process, and Real Estate, until we could see the operating statement. Indeed, we need two operating statements, or at least parts of the preceding statement for comparison with the new. Suppose we find that the preceding statement shows us net sales of \$470,000. What tendencies does the new operating statement show? First, we find an increase of sales in 1922 amounting to 30% (\$611,000 as compared with \$470,000 in 1921). Now we can form some judgment about balance-sheet increases of assets on Jan. 1, 1923, as compared with assets on Jan. 1, 1922. We find the inventory of merchandise or finished goods on Jan. 1, 1923, \$29,000 larger than on Jan. 1, 1922 — an increase of 45% (\$93,000 as compared with \$64,000); and yet we have just found the business increasing only 30%. Is it favorable to accumulate a 45% increase of stock with only a 30% increase of sales? Raw Material has increased 50%. Accounts receivable, again, show an increase of 49% (an increase of \$42,000 over the \$86,000 of Jan. 1, 1922), and yet sales, as we have seen, increased only 30%. Does this mean slower collections and accumulation of bad accounts? Let us examine this.

**Accounts Receivable and Sales.** Suppose we now consult the books and find some facts about the previous year. Suppose we find that on Jan. 1, 1921, the balance of Accounts Receivable was \$73,000, and that in 1921 the discounts given to customers on sales of that year were \$19,000. Suppose we also find that in 1921 the discounts chargeable to the Allowance for Discounts Offered set up in the previous year was \$2,000, and in 1922 was \$2,500. Now we are in a position to learn how the discounts of 1922 compare with the discounts of 1921. We must first find the amount of accounts receivable settled in each of these years, thus:



Accounts Receivable on balance sheet,	1/1/21, \$73,000;	1/1/22, \$86,000
Sales of	1921, <u>470,000;</u>	1922, <u>611,000</u>
Collectible in	1921, \$543,000;	1922, \$697,000
Accounts Receivable on balance sheet,	1/1/22, 86,000;	1/1/23, 128,000
Accounts settled in	1921, <u>\$457,000;</u>	1922, <u>\$569,000</u>

The next step is to show what discounts were actually taken on these settled bills.

Discounts given (in year, for year)	1921, \$19,000;	1922, \$28,000
Discounts charged in later year to allowance of earlier year	1921, <u>2,000;</u>	1922, <u>2,500</u>
Total discounts on settlements of	1921, <u>\$21,000;</u>	1922, <u>\$30,500</u>
Percentage of discounts to settlements	4.6%	5.4%

We find, then, that the average discount rate is higher on the sales of 1922 so far settled than on those of 1921; and if there has been no change in the general level of rates offered, it is obvious that payments are quite as prompt — else the discounts could not have been taken. The writing off of any accounts as bad debts, moreover, tended to reduce this average (raising the figure of settlements but not that of discounts). Only in case the doubtful accounts have been carried on the books longer in 1922 than in 1921, which there is no reason to suppose, could the figure of average discount as calculated fail to prove that collections were better in 1922 than in 1921. How then explain a 49% increase in accounts receivable with only a 30% increase in sales? Will collections from accounts receivable keep pace with increases in sales, precede them, or follow them? Sales of October are collectible in late October or November; many of the sales of December are not collectible until January. As long as a business is growing, then, its collections never catch up with its sales; for while bills are maturing sales are piling up faster; but a period of equilibrium or of decline enables collections to catch up.

**General Effect of Expansion.** Similarly, unless a business can increase its rate of turnover, its stock of goods must increase ahead of its sales (for a business does not ordinarily sell goods that it does not possess); so that the reason for stocks of goods running ahead of sales is the reverse of that under which accounts receivable balances keep ahead of sales. As a general tendency, what



we have just seen to be true of a growth of inventory of merchandise is equally true of a growth of inventory of raw material and of goods-in-process. They are procured in anticipation of expansion; but they may run behind, as goods-in-process does here, perhaps because of lack of labor. Real estate, again, may need expansion with growing sales, and may run ahead of or behind that expansion, according to circumstances. In the case before us, these expansions all look reasonable, as they would hardly do were sales running more slowly. We wonder now whether the decrease in cash is on the whole fortunate. We cannot tell, however, without a fuller statement of maturities of assets and liabilities, such as was given on page 342.

**These Studies Typical.** The fragmentary interpretation of the balance sheets and the income sheet just given is meant to be suggestive only. A multitude of relations in any active business are likely to be worth study, especially when combined with statistics not shown in financial figures, as hinted at in Chapter XV. Great care must be taken, however, not to form judgments of importance on insufficient evidence. Usually many facts not shown on either income sheets or balance sheets must cast side-lights on those sheets before anything like a final black or white judgment of a business is possible.

**Statement of Affairs.** Akin to the analyzed balance sheet shown on page 342, for a business that is solvent and is continuing, is a form of statement for businesses about to be liquidated. We have already seen that the value of assets in liquidation is commonly very different from the value of the same assets in natural gradual conversion. The books cannot show liquidation values — at least until after the event — but in laying out a course of procedure in liquidation one must use values in advance of the event. Since, moreover, specific assets are often pledged for the payment of particular liabilities, one cannot know how much will be available for the payment of unsecured liabilities until all liabilities specially secured have been set off against the assets applicable to them. Hence a form, called a "statement of affairs," is used, for a business about to be liquidated, in such a way as to show what assets are applicable to what liabilities and how far the assets are adequate, or more than adequate, for that purpose.

**Principle of Arrangement of Statement of Affairs.** Since the purpose of a statement of affairs is to show adequacy or inadequacy of assets, the grouping of items has regard largely to cancellations of assets against liabilities in two general ways: pledged assets are set off, item by item, against the specific liabilities which they protect, and then the surplus value of pledged assets (above the secured claims against them) and the value of unpledged assets are set off as a lump sum against the unsecured liabilities, so as to show the deficiency (or insolvency) on one hand or the balance of proprietorship on the other. Since, moreover, in drawing up such a statement it is easy to omit or duplicate some item or part of an item by inadvertence, it is desirable to incorporate in the statement figures from the trial balance or the balance sheet by way of proof. If any allowance accounts are on the books, it is well to show both the gross and the net book value of assets as a check against error and as assurance that all balance-sheet figures have been utilized and accounted for.

**Detail of Arrangement of Statement of Affairs.** It is well to show sources of figures, so that it will be clear that none have been juggled. If we begin with liabilities, as is common, we will divide them into groups according to security — those wholly secured, those partly secured, and those unsecured. Usually those wholly secured are still further subdivided into those having a preference by law without special security, commonly called “preferred claims,” chiefly wages, taxes, and expenses of liquidation, and those secured by contract. Under those preferred by law will be placed the assets available for meeting them; and if the immediately available assets are inadequate the amount is extended as a claim against other assets, whereas if a surplus is shown it is carried to the other side of the statement as available for meeting unsecured claims. It is well to show the full figure wherever an item is used — to show that no juggling has taken place. In the form following, for example, though only \$1,000 of cash is to be applied to expenses of liquidation, it is well to show the whole \$3,000 available for payment. When property is pledged, but is not worth the book value, it is well, in connection with the liability, to show both the book value and the estimated value — in order that all the relationships may appear in their natural con-

text. On the assets side it is well to show three columns, one for ledger values, one for net-ledger values, and one for estimated available balances applicable to unsecured claims. The net-ledger column is to show the net value of assets after any allowances have been subtracted and after any applications have been made of those particular assets to secured claims already shown on the ledger; that is, the purpose is to show any values that will remain on the ledger after debits and credits have been set off against one another as far as they will go. Then the difference between the net-ledger value and the estimated available value represents the shrinkage in values through liquidation — a matter of large statistical importance. It is well, when of any particular type of assets some are pledged and some are not, to show the total in the ledger column, agreeing with the balance sheet, separate them in the net-ledger column, and continue the subdivisions in the last column. The difference between the last column on the assets side and the last on the liability side is the deficiency in case of insolvency, or the net worth in case of solvency. No standard form is in use, however; the whole matter is one of making clear all the necessary relations.

**Illustration of Statement of Affairs.** For illustration by a simple case, let us start with a balance sheet, make certain additional suppositions about values and pledges and liabilities, and proceed to a statement of affairs. The balance sheet follows:

Cash	\$ 3,000	Proprietor	\$15,000
Accts. Receivable	10,000	Accts. Payable	18,000
Merchandise	20,000	Notes Payable	4,000
Fixtures	4,000		
	<u>\$37,000</u>		<u>\$37,000</u>

The notes payable are secured by a lien on merchandise having a book value of \$10,000, and \$3,000 of the accounts payable are secured by a lien on accounts receivable having a book value of \$6,000. The expenses of liquidation are estimated at \$1,000. Of the accounts receivable, \$7,000, including the \$6,000 pledged, are estimated good, \$2,000 doubtful (probably 50% good), \$1,000 bad. The fixtures are worth \$1,000, the merchandise pledged is deemed worth \$3,500 and the rest of the merchandise \$4,500.



## STATEMENT OF AFFAIRS

*Liabilities*

		<i>Ledger</i>	<i>Claim against general assets</i>
Preferred claims			
Expense of liquidation estimated	\$1,000		
Cash available	<u>3,000</u>		
Balance shown contra	\$2,000		
Fully secured claims			
Accounts Payable (part)	\$3,000	\$3,000	
Accounts Receivable pledged	<u>6,000</u>		
Balance shown contra	\$3,000		\$0,000
Partly secured claims			
Notes Payable	\$4,000	4,000	
Merchandise pledged \$10,000			
Estimated value of merchandise pledged	<u>3,500</u>		
Balance unsecured			500
Unsecured claims			
Accounts Payable (balance, \$18,000 — \$3,000)		15,000	15,000
Totals		<u>\$22,000<sup>1</sup></u>	<u>\$15,500</u>

*Assets*

		<i>Ledger</i>	<i>Net Ledger</i>	<i>Estimated available value</i>
Cash	\$3,000	\$3,000	\$3,000	
Less expenses of liquidation	<u>1,000</u>			
Balance available	<u>\$2,000</u>			\$2,000
Accounts Receivable	\$10,000	10,000		
Pledged, good	\$6,000    6,000			
Less required for Accounts Payable	<u>3,000</u>			
Balance available	\$3,000		3,000	3,000
Unpledged	<u>\$4,000</u>		4,000	
Good	\$1,000			1,000
Doubtful	2,000			1,000
Bad	<u>1,000</u>			
Merchandise	\$20,000	20,000		
Pledged	10,000			
Estimated value	\$3,500		6,500	
Lien for Notes Payable	<u>4,000</u>			
Balance liability (contra)	\$500			
Unpledged	<u>\$10,000</u>		10,000	4,500
Fixtures		4,000	4,000	1,000
Totals		<u>\$37,000<sup>2</sup></u>	<u>\$30,500<sup>3</sup></u>	<u>\$12,500<sup>4</sup></u>
Deficiency				3,000
				<u>\$15,500</u>

<sup>1</sup> This figure, \$22,000, plus the proprietor's balance, proves with the balance-sheet total of \$37,000.<sup>2</sup> This total agrees with the balance sheet.<sup>3</sup> The difference between these totals shows the estimated loss on liquidation, including expenses.

**Deficiency Statement.** It is well now to have a summary statement showing the causes of deficiency and the net effect. A deficiency does not begin until the proprietor's ownership is wiped out; so that whereas a deficit is loss of owner's property, a deficiency is loss of other people's property after the owner's property is all gone. When we have a deficiency, then, we wish to see how much of each kind of ownership-claim was lost. The middle column of the assets side of the statement of affairs shows the net value of the assets — that is, the ledger value of assets less any allowances (in this case none) and any applications of assets to liabilities shown on the ledger; and the last column shows what is estimated to be available, from that net-ledger value, to pay unsecured claims: the difference between them is clearly shrinkage in realization. The items of shrinkage may be expressed as Causes of Deficiency, as shown below. The effect of the causes of loss must exactly equal the total measure of all the kinds of ownership lost. This gives us, for the case above, the statement given below.

## DEFICIENCY STATEMENT

<i>Causes of loss</i>		<i>Whose property was lost</i>	
Expenses of liquidation (3,000—2,000 cash)	\$1,000	Proprietor	\$15,000
Loss on accounts receivable (4,000—2,000)	2,000	Deficiency	3,000
Loss on merchandise (16,500—4,500)	12,000		
Loss on fixtures (4,000—1,000)	3,000		
	<u>\$18,000</u>		<u>\$18,000</u>

## QUESTIONS AND PROBLEMS

1. (a) What specific information is given by the following statement?

*Trial Balance, December 31, 1924*

Capital Stock		\$100,000
Bills Payable		20,000
Accounts Payable		30,000
Merchandise		10,000
Accounts Receivable	\$47,000	
Fixtures	7,000	
Wages and Salaries	87,000	
Advertising	7,000	
Commission		2,100
Rent	4,000	
General Expense	22,000	
Petty Cash	100	
Cash	2,000	
Surplus		14,000
	<u>\$176,100</u>	<u>\$176,100</u>

- (b) Can the following statement refer to the same business as of the same date? If so, explain the discrepancies. If not, what information does the second statement give?

Merchandise	\$105,000	Capital Stock	\$100,000
Accounts Receivable	47,000	Bills Payable	20,000
Fixtures	5,500	Accounts Payable	30,000
Commissions Earned	300	Allowance for Bad Debts	3,000
Cash	2,050	Accrued Wages	2,000
		Surplus	4,850
	<u>\$159,850</u>		<u>\$159,850</u>

2. A business had the following balance sheet on January 1, 1921:

Real Estate	\$40,000	Capital Stock	\$60,000
Plant	20,000	Notes Payable	23,000
Raw Material	17,000	Accounts Payable	40,000
Goods-in-Process	16,000	Accrued items	7,000
Finished Goods	12,000		
Accounts Receivable	18,000		
Fixtures	4,000		
Cash	3,000		
	<u>\$130,000</u>		<u>\$130,000</u>

During the year it bought \$25,000 worth of raw material, paid for \$30,000 of raw material, issued \$40,000 worth of raw material, paid \$50,000 in wages (including \$3,000 accrued brought over from the



year before), paid \$30,000 of general expenses (including \$4,000 of old accrued items), sold \$160,000 of finished goods, collected \$140,000 on sales, and paid \$9,000 in dividends. Its balance sheet a year later was as follows:

Real Estate	\$35,000	Capital Stock	\$60,000
Plant	18,000	Notes Payable	5,000
Raw Material	2,000	Accounts Payable	35,000
Goods-in-Process	18,000	Accrued Items	8,000
Finished Goods	9,000	Allowance for Bad	
Accounts Receivable	34,000	Debts	5,000
Fixtures	4,000	Surplus	13,000
Cash	6,000		
	<u>\$126,000</u>		<u>\$126,000</u>

(a) Show summary journal entries for all the transactions of the year, and check them with the new balance sheet.

(b) Show the income sheet.

(c) Show in a statement the sources and application of values utilized during the year. What does the statement tell you about the condition of the business?

3. A trial balance of ledger totals at the close of business for a year reads as follows:

Partner A		86,000
Partner B		58,000
Partner A Salary	4,000	6,000
Partner B Salary	5,000	5,000
Bills Payable	18,000	23,000
Bills Receivable	21,000	18,000
Accounts Payable	195,000	215,000
Accounts Receivable	285,000	200,000
Merchandise	258,000	327,000
Fixtures	8,000	
Salaries and Wages	70,000	
Rent	12,000	
Taxes	1,000	
Insurance	600	
Interest	7,700	
Freight and Cartage	1,050	
Advertising	18,000	
Other Expenses	6,650	
Loss by Bad Debts	18,000	
Cash	9,000	
	<u>938,000</u>	<u>938,000</u>

The income sheet was reported as follows:

Sales		\$308,000	
Less returned sales		<u>15,000</u>	
Net sales			\$293,000
Inventory at beginning		\$44,000	
Purchases	\$199,000		
Less returned purchases	<u>19,000</u>		
Net purchases		<u>180,000</u>	
Merchandise handled		\$224,000	
Inventory at end		<u>85,000</u>	
Cost of goods sold			<u>139,000</u>
Gross profit			\$154,000
Salaries and wages	\$73,000		
Rent	12,000		
Taxes	1,000		
Insurance	400		
Interest	7,600		
Freight and cartage	1,050		
Advertising	18,000		
Loss by bad debts	18,000		
Other expenses	<u>6,650</u>		<u>137,700</u>
Net profit			\$16,300
Partner A share		\$7,500	
Partner B share		5,000	
Reserve for losses and shrinkages		<u>3,800</u>	<u>16,300</u>

- (a) Show the balance sheet, in a form similar to that shown on page 345, for the beginning of the new year.
  - (b) What comment have you to make on the handling of merchandise on the books?
  - (c) How far are the figures reported for purchases and sales consistent with the figures of the trial balance?
4. How much necessary information, if any, does the following balance sheet fail to give about solvency: i.e., what questions, if any, need answering from other sources before the intelligent reader can judge of solvency? [Give your answer in the form of questions only, or state that no further information is necessary.]

Real Estate	\$100,000	Capital Stock	\$200,000
Merchandise	100,000	Notes Payable	50,000
Notes Receivable	60,000	Accounts Payable	75,000
Accounts Receivable	85,000	Reserve for Depreciation	25,000
Good Will	52,000	Surplus	70,000
Fixtures	15,000		
Cash	<u>8,000</u>		
	<u>\$420,000</u>		<u>\$420,000</u>

5. (a) How much do the two balance sheets below tell you about the operations of the year elapsed between their dates?

- (b) Are there any fundamental facts about that year's business which these sheets cannot tell you?  
 (c) Explain why your answer to (b) is what it is.  
 (d) Where are the profits?

	1916	1917		1916	1917
Mdse.	\$50,000	\$60,000	Cap. Stock	\$75,000	\$75,000
Accts. Rec.	75,000	55,000	Bills Pay.	20,000	15,000
Fixtures, etc.	14,000	13,000	Accts. Pay.	40,000	20,000
Cash	6,000	4,000	Allow. Bad Debts	3,750	2,750
			Surplus	6,250	19,250
	<u>\$145,000</u>	<u>\$132,000</u>		<u>\$145,000</u>	<u>\$132,000</u>

6. The following statement of a business for a year was prepared by the accountant:

Sales — Credits to customers during year		\$270,000	
Unpaid	\$55,000		
Paid on last year's sales	<u>74,000</u>		
Collections in excess of sales	\$19,000		
Written off	<u>1,000</u>	20,000	
Net sales of year			\$250,000
Purchases — Paid for during year		\$120,000	
Unpaid	\$20,000		
Paid on last year's purchases	<u>40,000</u>		
Paid in excess of purchases		20,000	
Net purchases of year		\$100,000	
Increase of inventory		10,000	90,000
Gross profit			\$160,000
Expenses paid in cash			<u>141,000</u>
Net profit			\$19,000
Dividends paid in cash			<u>6,000</u>
Surplus for year			<u>\$13,000</u>

- (a) Could this be for the same business and for the same year as are the balance sheets of Question 5? Explain in detail.  
 (b) What is your opinion of this as a form of statement?  
 7. Show a Statement of Affairs and a Deficiency Statement for the firm of A & B, whose condition is indicated below.

*Balance Sheet*

Cash	\$15,000	Accts. Payable	\$30,000
Mdse.	25,000	Notes Payable	27,500
Accts. Rec.	30,000	Partner A	17,500
Equipment	40,000	Partner B	35,000
	<u>\$110,000</u>		<u>\$110,000</u>

The merchandise is estimated worth \$5,000. The accounts receivable, divided into three classes, are estimated as follows: good, \$5,000;



bad, \$18,000; doubtful, worth probably 50 per cent, \$7,000. The equipment, estimated worth \$30,000, is pledged as security for the notes payable. Accrued liability for wages, not on the books, is \$3,000. Liability on endorsed protested notes, having no recoverable value, is \$7,000. The expenses of liquidation are estimated as \$1,500.

8. Show a Statement of Affairs and a Deficiency Statement for the following condition:

*Trial Balance*

Cash	200	Proprietor	27,700
Mdse.	13,400	Notes Payable	10,000
Accts. Rec.	42,500	Accts. Payable	23,400
Fixtures	3,000	Sales	24,500
Wages	17,000		
Office Expenses	8,000		
Misc. Expenses	1,500		
	<u>85,600</u>		<u>85,600</u>

There are accrued wages unpaid amounting to \$3,000, and accrued liabilities for advertising, stationery, printing, and other office expenses, amounting to \$2,000. The notes payable are secured by a mortgage on the merchandise. The merchandise is estimated salable for \$4,000, and the fixtures for \$500. The accounts receivable are estimated as \$10,000 good, \$20,000 bad, and the balance worth 50%. The expenses of liquidation are estimated at \$300.

## CHAPTER XXI

### THE EFFECT OF INTEREST ON VALUES

**The Present Value of Future Realizations.** It is universally recognized that an asset in hand to-day is worth more than an asset of the same intrinsic value which will come to hand a year hence. One wishes compensation for waiting, for one could be making use of the asset (either earning profit or deriving pleasure or benefit from its use) if one had it now. Future realizations, as a matter of simple business, then, are discounted in comparison with present property. The rate of interest to be used for discounting does not concern us here except as we must note that it varies with three conditions: the present market rate of interest, the degree of risk involved in the delay, and the probability of a change in the market rate of interest before the day on which the asset under consideration will be realized. Though in a sense the principle of valuation for assets realizable in the future is always the same, it appears in two aspects that may well be observed. A single value to be realized at a future time gives a simple calculation of discount; and a series of values to be realized at successive future times requires that either many separate values be added together or a formula be found for making one calculation for the series. When, however, the series is without limit of time, though mathematically the principle is the same, the practical working method is different. The value of a single payment of \$1,000 due in one year at 5% discount is \$952.38; of two payments, the first in one year and the second in two years, is \$1,859.41 (or \$952.38 for the first plus \$907.03 for the second); but the value of one such payment a year continued forever could not be calculated by this method, for there would be no stopping point — though one would reach a point at which one would see that the value could never go a cent higher because the discount would absorb the added \$1,000. The usual way to calculate the value of perpetual payments is to find what capital would produce that income and thus see what the income is worth — as we saw in connection with the earning-capacity basis

of capitalization. When interest is 5%, it takes \$20,000 to produce \$1,000 income, and hence a perpetual income of \$1,000 is worth \$20,000.<sup>1</sup>

**The Value of Stocks.** The commonest kinds of future realizations entering into business transactions are represented by stocks. A share of stock represents part ownership of a business, and unless that ownership is desired for some other than the usual reason (desire for the income which it may bring), its value is dependent on the probable earnings of the company. If interest is 5%, and the stock holds good prospect of perpetual annual dividends of \$5.00 a share, it is worth \$100 a share. If interest is 8% where such risks are involved, and the prospect is still for dividends of \$5.00 a share, the stock is worth \$62.50 a share; but if 8% is satisfactory interest (risk involved taken into consideration) and the stock holds prospects of \$12.00 a share dividends, the stock is worth \$150 a share. The rate of interest used in the calculation always takes into consideration the risk involved — the risk that a lower rate may be paid, that a loss may be incurred, that even capital may be sacrificed; in other words, the rate used at one end of the calculation is the rate deemed necessary under normal conditions to make the investment attractive, and the amount of dividend used at the other is the estimated dividend of the company under normal conditions. If the two are in agreement, the stock is worth par; if the interest is higher than the dividend, the stock will be worth proportionately less than par, and if the dividend is higher than the interest the stock will be worth proportionately more than par. This, it should be noted, is supposing no other considerations enter into the market. If, on the other hand, the stock is desired for control (perhaps by a competing business), or if stock has been sold short on the market and scarcity of offerings has put it at a scarcity price, or if a general tightness in the money market forces owners to sell in order to raise ready cash, the price may be temporarily very different from that naturally determined by earning capacity. About this there is no mystery, and in it no accounting is involved except entry for purchase and sale of stock and for dividends received. Similar to

<sup>1</sup> A discussion of the simple mathematics of future realizations will be found in Appendix C.



it, however, are other transactions for which neither the basis of valuation nor the accounting is so obvious.

**Good Will.** The profits of many businesses exceed a normal rate of return on their capital or net worth; i.e., the reputation which has been built up by the business, the circumstances under which it operates, the body of loyal employees which it has gathered around it, lead to profits greater than one can expect to earn by merely gathering together the necessary physical elements of a successful business and getting into the market. To put this in another way: one would rather own this old business than start a new one with similar assets in the form of purchasable buildings, machinery, equipment, etc. In the degree that one would rather have the old business one would be willing to pay a premium for it. The amount which a properly informed and properly equipped person would pay as premium for it is the value of the good will. What determines the good will? It is due to the earning capacity of the business as an entity above the earning capacity of equal and similar assets dissociated from the business; and hence it is measured by the present value of the future earnings which are to be realized from the peculiar circumstances of this business. The value of the good will is the capitalized value of its earnings above normal. This may be approached also from the other end. If I am justified in paying \$20,000 for the good will of a business, it must be because I expect to get back my \$20,000 or to get an additional income which will be equivalent to a proper earning of \$20,000 continuously. If I am not expecting to sell again, I expect my return to be in the form of earnings greater than I could get if I started a new business — else I should never have opportunity to get any kind of return. I may pay a high price for good will not only because present earnings are high but because future earnings are expected to be higher. Since good will is due to the earning capacity of the business, as a going concern, above the natural earning capacity of a similar set of assets exclusive of good will, the amount of good will can be calculated very closely provided one knows as a basis the extra earning capacity. Theoretically, since the extra earnings usually come not in large annual payments but in a steady small stream through the year, the value of the good will is the capitalized value of such a steady stream;

but since the extra earnings are themselves only estimated, almost wholly problematical, it would be absurd to calculate to so fine a point as the value of a daily income as contrasted with an annual income, and therefore the method of calculation is simply the capitalized value of the extra annual earnings. Many a business has been sold for an amount far in excess of the value of its assets exclusive of the good will and the trade has been fair; but many another has been similarly sold and the buyers have found the good will worth nothing. Few things, indeed, are more problematical than good will; for a shift of fortune may destroy it, as a shift of the wind may destroy a yacht's chance at a prize that is almost in sight.

**Accounting for Good Will.** Because the value of good will is so problematical, the usual practice in accounting is to refrain from showing it as an asset upon the books unless it has been paid for by something given in exchange. This practice has not only common sense but convenience to recommend it. To put good will on books of account merely because it has developed within the business is to attempt to show changes in values on the balance sheet, and one might as well show gain or loss of proprietorship through rises and falls in the value of real estate still held. To put on the books what is paid for good will purchased, however, is to show costs, and one must show what was got for what was given — unless, indeed, one wishes to charge some nominal account and thus create a secret reserve (which, of course, is bad accounting, for the purpose of accounting is not to hide the truth but to show it). If these earnings are assumed to be perpetual, good will once purchased is an asset forever; and no reason appears for depreciating it. As a matter of fact, however, it is not uncommonly written off the books over a series of years, largely on the theory that the old good will does wear out and new good will takes its place — it is certainly true that the old would not last long if no effort were made to create new; but if the new maintains or replaces the old, no reason except conservatism (virtually a desire for a secret reserve) exists for writing off Good Will.

**Trade Marks.** Akin to good will is the right to a trade mark. Indeed the possession of a trade mark may be one of the elements



of good will. Like good will, however, the possession of a trade mark should not be entered as an asset unless it has been purchased. The value, moreover, is very hard to learn, for nothing can tell how much of general profits comes from the possession of such a mark and how much comes from other sources.

**Franchises.** Akin to good will are also franchises, or rights to conduct certain businesses, particularly public-utility services. If the franchise is perpetual, its value depends upon the earning capacity. If the earning capacity is no greater than a reasonable return on the investment of property, the franchise has no value (unless for some extraneous reason not connected with the operation of the property as an entity); but if it assures large profits in perpetuity, it has a value equal to the capitalized value of the earnings above normal.

**Concessions.** Akin to franchises, and yet of a type so different that in a sense we come now to a new field, are concessions for a fixed period of time, like the right to maintain news-stands in railroad stations, etc. If the right to maintain a news-stand will bring \$5,000 a year above the natural rate of profits on the capital invested, the value of that concession is \$5,000 a year; but as it would always be given for a limited time only, its value would not be the capitalized value of an income of \$5,000 a year. The price paid would depend upon the duration of the concession and upon the time of payment. If, for example, the concession were for one year and the payment were one lump sum payable in advance, the price should not be \$5,000; for no one would pay \$5,000 now for the privilege of getting \$5,000 by the end of the year. The purchaser should pay in advance the present worth of what is virtually a steady stream of installments that will come to a total of \$5,000 at the end of the year. If the concession is for two years, and payment is made in advance, the price will be the present worth of a stream that will come to a total of \$10,000 in two years. If, however, the payments are to be made monthly, we should find a series of monthly payments that equal in value a steady stream that will come to a total of \$10,000 in two years. In practice the matter is not worked out so finely as this, for no one knows what the profits are going to be, and it is absurd to work out to a high degree of refinement the mathematical end of



the problem when the basis figure of the whole thing is itself problematical. We shall later find kinds of kindred transactions, however, in which the basis figure itself is a matter of contract and therefore known, and hence the calculation may be, and as a matter of business practice actually is, very fine. The discussion of accounting for concessions we will postpone until we have observed some other intangible properties of somewhat the same type.

**Patents and Copyrights.** The value of a patent and of a copyright will be determined on similar considerations, for the monopoly privilege which each confers may have an earning capacity and is by law limited to a term of years. If the possession of a patent or a copyright enables me to sell at a higher price or to sell more goods, the possession is worth paying for as a single sum, or as commuted to an annual or a monthly charge, or as a royalty of a certain sum for each article produced and sold under the contract.

**Accounting for Concessions, Patents, Copyrights.** If a concession, a patent, or a copyright, is secured under terms which call for a periodic payment, either fixed or on a unit-royalty basis, the accounting is simple. It means simply an operating charge. When, however, a lump sum is paid, we get a new situation. This lump sum represents an asset, of course, for it establishes a right to certain privileges that are expected to bring a return; but it is not a perpetual right, as good will and franchises may be, and consequently it cannot remain indefinitely on the books. It disappears with the lapse of time. In order to see what to do with it, we must see just what it is. Suppose a patent is purchased on the supposition that the ownership of that patent will enable the owner to make \$3,000 a year profit, above a normal return on his investment in manufacturing and selling the goods, for the next ten years. The price of the patent, supposing it is fixed on this basis, will then be, on a 5% basis for the use of money, \$23,165.21 — the present worth of an annuity of \$3,000 a year for ten years at 5%. When purchased at that price, Patent Right may be debited as an asset at that figure. A year later, however, the right is no longer deemed worth that figure, for it is now estimated to yield a profit of \$3,000 for nine years only; and the present worth of an annuity of \$3,000 a year for nine years is only \$21,-

323.47. So the shrinkage is \$1,841.74, and this is chargeable as a cost of the business of producing and selling the patented article. As a matter of fact, moreover, we have not only suffered a shrinkage of our patent right during the year, but have also lost the use of our money paid for the patent. If we take that at 5% (the rate actually used in determining the value of the patent), we shall find that the interest on the original \$23,165.21 paid for the patent is \$1,158.26. If now we add together the shrinkage in the patent right and the interest on the investment, we get the \$3,000 with which we started as the annual estimated yield from the patent, proving the correctness of our figures — proving, that is to say, that the price paid was correct. For the seller of the patent, too, the price is right, for he has had the use of the money for a year, worth \$1,158.26, and the portion belonging to this year of the \$23,165.21 paid to him is \$1,841.74, or a total of \$3,000, which just offsets the estimated earning capacity for one year of the patent which he surrendered. If we deem interest on the money locked up in the patent to be one of the costs of using the patent, as most cost accountants do, our entry at the end of the year will be a debit to Patent Privileges, \$3,000, and a credit to Patent Right, \$1,841.74, and to Interest Earned, \$1,158.26. Whether the interest shall be taken into account or not is discussed in the next chapter; but it is indisputable that operating expenses must be debited for the shrinkage in the patent right and that Patent Right must be credited. This same principle applies to Concessions, Copyrights, and any other similar rights which have been purchased for a lump sum but expire beyond the current earning period.

**Leaseholds.** What has just been discussed in connection with patents and copyrights would apply also to leaseholds if it were customary to pay in advance for a limited number of years' right of tenancy. Usually, of course, a person desiring tenancy either buys the property or leases it for a periodic rental. In fixing rental on a lease, of course, effort is made to fix it right — that is, the principle of bargaining tends on the whole to make it right for the life of the lease. Yet it often happens that during the life of a lease changes occur in the real estate market, and the property becomes more or less valuable than it was deemed to be



(even allowing for the future) at the time the lease was made. The property may become either too good or too poor for the purpose for which it has been used, and a change of tenancy may be wise. Suppose the lease has yet ten years to run at an annual rental of \$10,000, but because of changes in the course of trade the property is now worth \$13,000 a year. Obviously the holder of the lease has in his possession a right worth \$3,000 a year — the right to use at a cost to him of \$10,000 what has an earning capacity of \$13,000. This right has then a value equal to the present worth of \$3,000 a year for ten years — which we saw in the last paragraph to be, at 5%, \$23,165.21. A buyer of the lease from him at that price will debit Leasehold for that sum. The seller, in turn, since he gets this as a pure chance gain not connected with the operations of his business, will credit Surplus, or, preferably, Capital Surplus. The buyer, on the other hand, must realize that this leasehold does not constitute a perpetual asset, but one rapidly disappearing. In the first year of his tenancy he will have three items to consider in his rental — \$10,000 to be paid to the landlord as required by the lease which he has purchased, \$1,841.74 shrinkage on the lease (similar to the shrinkage in the patent right as shown in the preceding paragraph), and \$1,158.26 interest on his investment. These together make \$13,000, the fair rental charge. The next year the rent will be \$10,000, the shrinkage in the leasehold right will be \$1,933.83 (the present worth of an annuity of \$3,000 for eight years is \$19,389.64), and the interest on the investment will be \$1,066.17 (less than before, because a part of the investment has been returned in the first year's use of the building and the balance of investment remaining at the end of the first year is only \$21,323.47). This again gives \$13,000 total rent.

**Bonds.** When we turn to bonds we find future realizations that are not problematical but stipulated by contract. A bond is a promise to pay two things — a certain sum, called the principal, at a date named, usually rather remote (sometimes in as few as five, and sometimes in as many as seventy-five years), and interest periodically until the principal is paid. The value of the bond is the present worth of those two things — the present worth of the principal plus the present worth of the series of interest payments.



The only element of uncertainty in the situation is the rate of interest to be used in valuing those future payments. It should be noted that the rate of interest used for this purpose may or may not be the same as the rate of interest "nominated in the bond" as payable until the principal is paid. Suppose a railroad issues bonds in denominations of \$1,000, payable in ten years, with interest at  $4\frac{1}{2}\%$ . This means that the road promises to pay for each bond \$1,000 at the end of ten years and interest amounting to \$45 per year during that time. If the credit of the road is good, so that no one questions its ability and willingness to pay the principal and interest (except as business is subject always to risks, some businesses to more and some to less even in the same general line, because of local or individual conditions), the bonds will be desirable just in proportion as the interest payable on the principal of the bond is deemed by investors satisfactory. If the conditions of risk surrounding the issue of these bonds, or the road which issues them, are such that investors think the bonds ought to pay 5% interest rather than  $4\frac{1}{2}\%$ , the bonds will not be worth par, but if investors would be satisfied with 4%, the bonds will be worth a premium. The reason, moreover, will be exactly similar to the reason that gives a value to stocks, good will, patents, leaseholds, etc.; but it can be applied more exactly, for here there is only one element of uncertainty, the rate of interest that ought to be used in discounting the future realizations, whereas in the other cases not only that rate but the amount to be realized in the future was problematical.

**Finding the Value of a Bond.** It is obvious that if the rate of interest to be paid by the bonds is what investors deem a fair rate, the bonds will be worth par: for until the principal of the bonds is paid the investor gets as interest what he thinks is a fair rate to compensate him for the use of his money and the risk he takes. So in that case the value of the bond is automatically found. For the sake of an illustration to follow, however, let us find the value of this bond by the method of valuing the future realizations to come from it, thus:

Present worth of \$1,000, payable in 10 years, discounted at $4\frac{1}{2}\%$ ..	\$643.93
Present worth of annuity of \$45 for 10 years, discounted at $4\frac{1}{2}\%$ ..	<u>356.07</u>
Present worth of bond.....	\$1,000.00

We see the proof of our statement that the bond is worth par: the interest for the ten years compensates the buyer of the bond for waiting to get back the \$1,000 which he pays for it. Now let us suppose that the interest provided by the terms of the bond is not  $4\frac{1}{2}\%$ , or \$45 a year, but  $4\%$ , or \$40, and still the investor thinks that in view of the risks involved he should be promised  $4\frac{1}{2}\%$  on his money. We saw a few moments ago that he will not pay par for the bond. How much will he pay? Thinking that he ought to have  $4\frac{1}{2}\%$  on his investment, he will pay a price that will yield  $4\frac{1}{2}\%$ , and will pay no more; that is, he will discount the future realizations on the bond at  $4\frac{1}{2}\%$  interest and pay what they are worth, as follows:

Present worth of \$1,000, payable in 10 yrs., discounted at $4\frac{1}{2}\%$ . . .	\$643.93
Present worth of annuity of \$40 for 10 yrs., discounted at $4\frac{1}{2}\%$ . . .	<u>316.51</u>
Present worth of bond . . . . .	\$960.44

The drop in value is due to the fact that now the interest payments of forty dollars are not adequate to compensate the buyer for the ten years that he has to wait to get his money back if he pays \$1,000; and so he will not pay \$1,000 for the bond. If, on the other hand, the bond were to pay \$50 a year interest, or  $5\%$  on the face value, the value of the bond would be above par, as shown below.

Present worth of \$1,000, payable in 10 yrs., discounted at $4\frac{1}{2}\%$ . .	\$643.93
Present worth of annuity of \$50 for 10 yrs., discounted at $4\frac{1}{2}\%$ . .	<u>395.63</u>
Present worth of bond . . . . .	\$1,039.56

It should now be observed that the premium, or the amount by which the bond is worth more than par, is in this last case \$39.56; but the discount, or the amount by which the bond is worth less than par, was in the previous case also \$39.56 (\$1,000 - \$960.44). Is this a coincidence? By no means. This is a case exactly parallel with good will, franchises, patent rights, etc. If this bond will pay interest higher than that which will give a normal return on the investment, which is commonly called the "basis" rate or the "yield," it is worth a premium: if it pays a lower interest, it will be at a discount. Let us work this out by methods analogous to the method used in the other cases. When the bond pays  $4\%$  (that is, \$40 a year) and the fair rate would be  $4\frac{1}{2}\%$  (or

\$45), the bond is paying \$5 a year less for ten years than it should pay. The present worth of an annuity of \$5 a year for ten years is \$39.56 (one-tenth of the present worth of an annuity of \$50 as shown in the last table). So of course the bond is at a discount of \$39.56. When, however, the bond pays \$50 a year interest, it pays an extra \$5 above the fair rate, and hence is worth a premium of \$39.56. So we may find the value of a bond by either of two methods — (1) the present worth of the principal plus the present worth of the interest payments, as we did at first, or (2) the present worth of any excess interest to be added to the face of the bond, or the present worth of any deficiency of interest to be subtracted from the face of the bond. If the bond pays interest semi-annually, and the basis rate is to be taken also as half yearly, its value will be found by similar methods, except that instead of discounting at  $4\frac{1}{2}\%$  for ten periods, we must discount at  $2\frac{1}{4}\%$  for twenty periods, and the interest will be only half as much for each period. The value of the bond when it pays 4% a year in semi-annual installments will be \$960.09, and when it pays 5% a year in semi-annual installments will be \$1,039.91.

**Accounting for Bonds.** The accounting for bonds is similar to that for patent rights, etc., for the rights covered by bonds have a limit of time and hence expire. We saw in the last paragraph that a ten-year bond for \$1,000 paying 5% interest when  $4\frac{1}{2}\%$  is deemed a fair rate by investors is worth a premium of \$39.56. The buyer when he buys at that price will debit Bonds (specifying the kind) \$1,039.56. He must remember, however, that the bond will not continue to be worth \$1,039.56. The premium is due to the fact that the bond will pay excess interest for ten years. When, however, one year's interest has been paid, the claim to excess interest is for only nine years, with a present worth of \$36.34. So there is a shrinkage of \$3.22 in the value of the bond. Indeed, on the day of maturity the bond will pay only \$1,000 (plus interest for that year), and hence between purchase and maturity the shrinkage will be \$39.56, of which this \$3.22 is one year's installment. (The installment is less than one-tenth, for, as with the sinking-fund method of depreciation, even if we take less than one-tenth in early years the accumulations of interest will build up the ten-tenths by maturity.) Let us test this in a simple way. The



bond sells for \$1,039.56 because the buyer is willing to lend money at  $4\frac{1}{2}\%$ , and he found that by paying \$1,039.56 he could get his money back and net  $4\frac{1}{2}\%$  interest. Let us see whether he does that if he must suffer a shrinkage in the value of his bond of \$3.22 in the first year. The cash interest that he receives is, by supposition, \$50.00 (or 5% on a \$1,000 par value of the bond). If he loses \$3.22 shrinkage (this year's installment of the \$39.56 that will not come back when the bond is paid off as \$1,000), his net interest earned is \$46.78 (\$50.00 - \$3.22). What ought he to have? He has invested \$1,039.56, and expects  $4\frac{1}{2}\%$  on his investment, which is exactly \$46.78. In other words, he has paid just enough for the bond, and must realize that out of each year's interest received a part must be labeled on his accounts as partial return of his premium. When he receives his interest, therefore, he will debit Cash \$50.00, credit Bonds \$3.22, and credit Interest Earned \$46.78. Continuing this process for the ten years, at the end of the time he will have reduced the value of the bonds to \$1,000, which of course he will then receive in cash if the bonds are good, and will have credited Interest Earned for  $4\frac{1}{2}\%$  on the money invested. If the bonds had been bought at a discount, the converse would have been true: the bond interest would always have been less than  $4\frac{1}{2}\%$  on the investment, but the bonds would be daily growing more valuable as the day of maturity (with a value of \$1,000 though they were bought at \$960.44) approached. The entry for the first year would debit Cash \$40.00 (for under this supposition only 4% interest on the face value was to be paid), debit Bonds (for the increase in value) \$3.22, and credit Interest Earned \$43.22 (which is  $4\frac{1}{2}\%$  on the investment of \$960.44).

**Tables for Bond Values.** It is clear that when one buys a bond at either a premium or a discount the interest received on the bond is more or less than the interest earned, and the difference between the interest received and the interest earned is the decrease or increase in the value of the bond itself. Tables have been worked out and published to cover the value of bonds of different terms, bearing different rates of interest, and at different basis rates — i.e., to yield different rates of interest on the investment. The difference between the value of a bond having ten years to run

and the value when it has nine years to run is the increase or decrease in the value of the bond in the tenth year before maturity. Yet without such tables one can find the value for each year, and hence the "accumulation" of value, as increase is called, or "amortisation" of value, as decrease is called. Indeed, this is easily done by any of three methods. We have already found the value of such a bond by two methods for ten years, and by one of these for nine. We could similarly find the value for each of the ten years. This, however, does not prove our figures, and it is convenient to use a method which proves as we go. For bonds at a premium a so-called amortisation table accomplishes this. For every year it does what we did in the last paragraph, shows that the bond interest minus the amortisation is equal to the basis (fair) interest on the amount still in the investment. In the table following, the first column shows the interest paid by the bond; the second column shows the basis rate (the rate agreed upon as fair for this sort of investment) on the preceding book value of the bond as shown by the table; the third column shows the difference between the first column and the second, and therefore the amount by which the owner of the bond has received more than the basis rate, and therefore the amount actually returned to him of the premium paid by him (and it was this extra interest that induced him to pay that premium); and the last column shows the remaining value of the bond — the original cost less what the owner has already got back as extra interest, and hence what still remains invested in the bond.

<i>Date</i>	<i>Bond Interest</i>	<i>Basis Interest</i>	<i>Amortisation</i>	<i>Book Value</i>
Jan. 1	5%	4½%		
1920				1,039.56
1921	50.00	46.78	3.22	1,036.34
1922	50.00	46.64	3.36	1,032.98
1923	50.00	46.48	3.52	1,029.46
1924	50.00	46.33	3.67	1,025.79
1925	50.00	46.16	3.84	1,021.95
1926	50.00	45.99	4.01	1,017.94
1927	50.00	45.81	4.19	1,013.75
1928	50.00	45.61	4.39	1,009.36
1929	50.00	45.42	4.58	1,004.78
1930	50.00	45.22	4.78	1,000.00
	<u>500.00</u>	<u>460.44</u>	<u>39.56</u>	

The totals also serve by way of proof. The total bond interest for ten years, \$500, less the basis interest \$460.44, gives the amortisation, \$39.56; and this subtracted from the original price of the bond gives the par value. Each year's entry, therefore, debits Cash for the bond interest, credits Interest Earned for the basis interest, and credits Bonds for the amortisation. The \$1,000 finally paid on the bond, plus the amortisations received, gives the total originally paid for the bond, or \$1,039.56, and interest each year at  $4\frac{1}{2}\%$  on the amount not amortised is also shown as received. The figure given in the book-value column at each date is the value of the bond on that date exclusive of the interest due on that day (that is, it is the value of all future payments to be made on the bond, both principal and interest); for a seller of a bond would not ordinarily when selling on an interest date sell the interest claim due on that day (that would be like selling money). The accumulation table, the converse of this, follows. The only explanation needed is a reminder that since now the owner is not collecting full fair interest, the amount of deficient interest should be compounded, as is shown by the calculation of the basis rate on the growing book value.

<i>Date</i>	<i>Basis Rate</i>	<i>Bond Rate</i>	<i>Accumulation</i>	<i>Book Value</i>
Jan. 1	$4\frac{1}{2}\%$	4%		
1920				960.44
1921	43.22	40.00	3.22	963.66
1922	43.36	40.00	3.36	967.02
1923	43.52	40.00	3.52	970.54
1924	43.67	40.00	3.67	974.21
1925	43.84	40.00	3.84	978.05
1926	44.01	40.00	4.01	982.06
1927	44.19	40.00	4.19	986.25
1928	44.39	40.00	4.39	990.64
1929	44.58	40.00	4.58	995.22
1930	44.78	40.00	4.78	1,000.00
	439.56	400.00	39.56	

**The Importance of Amortisation and Accumulation.** That the disappearance of premium and of discount as a bond approaches maturity is important may be shown by two simple illustrations. Suppose a will provides that the income of a certain estate shall go to certain individual beneficiaries during their lives and on



their decease shall go to certain charities. Suppose the estate is of \$100,000, and the trustee invests it in bonds which he buys at 125 — that is, a \$1,000 bond for \$1,250. He will then get \$80,000 in par value of bonds. Suppose he gives all the interest to the individual beneficiaries and when the bonds come due collects the \$80,000 and buys some more at 133 $\frac{1}{3}$ . He will get \$60,000 worth of new bonds. Suppose he again gives all the interest to the individual beneficiaries. When these bonds come due he will have only \$60,000 in the capital of the estate, though the estate was originally \$100,000. He has given to the life beneficiaries nearly one-half the estate that belongs to the charitable organizations. Let us now reverse the case, buy bonds at a discount, and pay no attention to accumulation. Suppose bonds are bought at 80 for the estate. The par value purchased will be \$125,000; but the interest will be low — else the bonds could not be bought at 80. Suppose the life beneficiaries receive the bond interest until just before the bonds mature, and then they die. The charitable organizations will receive \$125,000 though the estate intended for them was only \$100,000: the trustee has robbed the life beneficiaries of \$25,000. The details of handling trust estates are complicated, and have no place in a book of this sort; but the importance of distinguishing between capital and income is fundamental in all business.

**Profit and Loss on Bond Sales.** Often an investor thinks he has made a profit on bonds when he has really suffered a loss, or *vice versa*. Bonds bought at a discount are, unless something extraneous to them occurs, bound to rise in value with the approach of maturity. That rise is not profit to the holder — it is mere compensation to him for accepting a lower rate of interest (perhaps not actually low, but lower than the natural fair rate where such risks are involved). If, then, he sells his bonds thinking that he has made a profit, and the price at which he sells is not so much above his buying price as the natural accumulation on the bonds, he has deceived himself. He needed to sell at more than he did in order to avoid loss. Conversely, if bonds at a premium fall in the market, the fall may be due to the inevitable approach of maturity and disappearance of premium. To suffer that shrinkage is not to lose, for compensation is in the higher interest

rate while the bonds are held. To determine profit or loss, then, one must accumulate or amortise the bonds to the day of sale, bringing them to book value on that day, and then enter the difference between that value and selling price to the appropriate account previously discussed. For less than a full interest period amortisation and accumulation are taken at the proportional part of the full amount for the period. This creates for the novice a danger of error in calculating amortisation or accumulation for the remainder of that period (too confusing for examination in a book of this sort): suffice it to say that splitting a period in this way does not establish a new period for the compounding of interest, but the continuation of an amortisation or accumulation table is made by taking for the rest of the split period the remaining portion of the figures for the whole period, and then going on with a straight table as if no splitting had occurred. One should be careful, too, not to credit the bond account for the amount of the sale, unless all bonds in the account are sold; for if that is done and a profit is made, the credit for the profit appears to reduce the value of the bonds remaining, and if a loss is suffered the failure to take out of the account so much as was actually taken out in book value of bonds appears to raise the value of what remains. The bond account should be credited for the book value only of what was taken out.

**Accounting for Issues of Bonds.** The entries for issuers of bonds are the converse of those for purchasers. When a corporation issues its bonds at a premium, it debits Cash for the amount received, credits Bonds Issued (distinguishing kinds if more than one kind is issued) for the face of the bonds, and credits Premium on Bonds Issued for the premium. This premium is a liability: not for repayment when the bonds are paid, for only the par will be paid, but for continued extra interest payments as long as the bonds remain unpaid. Obviously each year, as the interest is paid, this liability is in part met, and it may be reduced. Interest Charges need be debited only for the basis rate on the bonds (say  $4\frac{1}{2}\%$  on par, though the bonds bear  $5\%$ ), and Premium on Bonds may be debited for the difference between that and the cash paid, reversing the entry made by the receiver of the interest. When a company issues bonds at a discount, it debits Cash for the amount

received, debits Discount on Bonds Issued for the discount, and credits Bonds Issued for the par value. This Discount on Bonds Issued represents an asset — the right to keep the money of lenders without paying normal interest on it. The company pays for that asset, however, in paying at the maturity of the bonds more than it got for them at issue. The approach of maturity destroys the asset, and it must each year be written down by a credit, which is accompanied by a debit to Interest Charges, increasing the latter account to a normal interest on the money borrowed.

**Other Bond Considerations.** The subject of investments involves many considerations not even hinted at in these pages, for many complicated financial arrangements are often involved, and these often involve mathematical calculations more elaborate than is worth while here. Such are bonds bearing two rates of interest, one after the other, and bonds giving the issuer the privilege of redemption earlier than the normal maturity. This enables the issuer to take advantage of a fall in the market rate of interest — but of course the investor appreciates that and allows for it in his willingness to buy. If the buyer and the seller are agreed as to conditions, they will fix the same price for the bond — for the price is determinable mathematically. The respect in which people who know their business have different prices in mind for the same bond is the rate of interest which they use for discounting future realizations. One man thinks for certain risks 5% is fair, and another thinks nothing less than  $5\frac{1}{2}\%$  is fair. By the same kind of mathematical calculation they inevitably get different results for the fair price for the bond.

### QUESTIONS AND PROBLEMS

1. A holds the lease of a building for two years, rental payable \$600 at the end of each half-year. He sublets the building for \$1,440 per year, payable semi-annually (at the same time that his payments as leaseholder are due), but with the understanding that he may end the subtenancy at will at the end of any six-months period. (a) Assuming that he is assured of constant subtenancy if he desires it, would he make a profit or a loss if he should accept an offer of \$400 for the leasehold privileges? (b) What entry should he make on his books if he sells?
2. An author contracted with a publishing house to publish a book. The author was to receive a minimum royalty of \$100 at the end of each of



three years, and in addition \$.20 on each copy sold during the year above 500. At the end of three years all rights of the author were to cease.

The author immediately sold his royalty rights on the basis of his minimum guarantee.

Actually 700 copies of the book were sold in the first year, and 800 in both the second and the third year.

Show the entries on the books of both the purchaser and the author for all the transactions. Interest may be assumed to be at 6%.

3. (a) An industrial company issues \$1,000,000 of 4% bonds at a discount of \$53,700. Should the discount appear on its balance sheet? If so, how and where?
- (b) A year later, without any change in the credit of the company or in the state of the money market, the acknowledged proper discount is but \$51,116. Explain (without attempting to prove the figures).
- (c) How will this change affect the books of the company? Show any entries required to produce the effect.
4. Two bonds are offered you: one is for \$1,000, 4%, payable in two years, offered at 98, and you think 5% is a fair basis; and the other is for \$1,000, 4½%, payable in three years, offered at 101½, and you think a 4% basis fair. Which is the better offer?
5. Fill in the missing items of the following table, and tell how you know what to add.

Bond Interest	Basis Interest	Amortisation	Book Value
2500	2038.08	461.92	101903.86
2500	2500	.....	\$101,441.94
\$2,500	\$2,028.84	\$471.16	1009.70.78
2500	.....	.....	.....
2500	.....	.....	.....

6. Fill out the book-value column by any method, but show all the figures you use.

	Bond Interest	Basis Interest	Amortisation	Book Value	Par Value
1/1/17	500.00	....	....	\$20,380.78	\$20,000
7/1/17	500	\$407.61	\$92.39	20288.39	20,000
1/1/18	500	....	....	....	20,000
7/1/18	500	....	....	....	20,000
1/1/19	500	....	....	20,000.00	20,000

7. A business holds a lease on property worth for rental purposes \$20,000 a year, but the lease, of long standing and with three years yet to run, calls for a rental of only \$15,000 annually. The company has not that lease on its books, for at the time of signature the rental of \$15,000 was fair. You now, considering the money to be worth 6%, buy the lease for \$13,365.06 in cash.

- (a) What entry should the selling business make on its accounts at the time of sale?
- (b) What entry should you make for the purchase?
- (c) Should you ever make any other entry in respect to the lease? If so, when and what?

8. (a) Fill in the missing items of the following table:

<i>Basis Interest</i>	<i>Bond Interest</i>	<i>Accumulation</i>	<i>Book Value</i>	<i>Par Value</i>
....	....	....	\$49,279.03	\$50,000
\$985.58	\$750.00	235.58	49,574.61	....
....	....	....	....	....
....	....	....	....	....

(b) What rate of interest does the bond bear, and what is the basis rate?

(c) Can you be sure of these, or are they only one set of answers out of several possible sets of answers? Could the bond rate be 3%; 6%?

9. If the lease mentioned in Problem 1 above is sold for \$446.05, what entry or entries will the buyer make six months later when he pays his rent, provided he occupies the property?

## CHAPTER XXII

### FINDING THE COST OF PARTICULAR PRODUCTS OR SERVICES

**The Fundamental Requirements.** At the bottom of all attempt to find costs must lie a systematic plan for the content of accounts, so that one may know that things of the same kind are in the same account and that nothing else is there; for finding costs of particular products or services requires gathering together all the elements of cost that go into one thing and excluding all costs that do not go into it. This means, then, that if one set of costs goes into certain products and another set does not, those two sets must not be combined in the same account (else the account must be gone over and cut into two parts before the desired costs can be found). Suppose, for example, that certain products require a very high temperature during manufacture (perhaps in a long drying process), but require little consumption of power (for they are made chiefly by hand), but certain other products require little artificial heat even in winter and require much power (for they are made on heavy machinery in a long process). To combine heat and power into one account would make it impossible for the accountant to find how much cost should be carried to these products with respect to heat and power; whereas if they were separated one knowing the proportions of total heat chargeable to one product, and the proportion of total power chargeable to the other, could directly from the accounts without further analysis attach the costs to the ends which they serve. Whenever, too, one wishes to measure cause and effect, one must be sure that the result of various causes be not carried to the same account, else one cannot measure the effect of any of them. Often, to be sure, causes are so thoroughly intertwined that the effect cannot be measured, but often, on the other hand, they can be so differentiated. It is common, for example, to carry light, heat, and power to one account — presumably because they all originate in fuel consumption. Yet a winter of warm, dull, damp days means a low charge for heat but a high charge for light; but a winter of clear, cold, windy days means a high charge for heat but a low



charge for light; and power cost is hardly appreciably affected by this difference in weather. To combine these three charges into one account is to throw away the opportunity for most of the statistical information, particularly with regard to economy, that one might get from them.

**The Resulting Accounts.** The result of these requirements is in all large businesses a very large number of accounts — hundreds or thousands — and yet by the use of labor-saving devices akin to those already described the bookkeeping labor is not extreme, and the information acquired is of great value to the manager. Let us examine a little more fully the need of differentiated accounts. Suppose we handle many kinds of raw material. Even though all go into the same product and always in the same proportions, we should keep an account for each, so that we may measure the effect of a change in price of each upon our total cost for raw material, and especially so that we may have a check on wastefulness or theft (for an increase in cost out of ratio to the increase in price and to the increase in production would mean loss somewhere). Suppose we make one uniform product, but sell it in different ways — in bulk, in cheap packages, in attractive packages. Not only the cost of packages and the labor of packing should be distinguished, but also the cost of the different types of packages and the different labor costs involved; otherwise we cannot judge the economy with which each kind of packing is done, nor can we judge the comparative profit of each class of sale. This last, moreover, requires that we keep a separate sales account for each class of sale — else we shall have nothing with which to compare the costs of each class of product. Suppose we manufacture two products which up to a certain point follow identical processes but then separate so that each goes its own course. Separate accounts would be kept for all the elements of the common cost, so that economy could be watched, and then a clearing account would bring together all the common costs of the two products up to that point. These costs would then be divided between the two products on an equitable basis (depending on circumstances), and would be carried to an account for each product. The later costs for each would be kept not only separate for the two products but analyzed by elements, so that

each element of cost could be watched; and then the individual costs for each product would be added to each product's share of the common costs, and the final cost for each would be then available. These illustrations, merely typical, serve to suggest why in the pages following so much emphasis is laid on subdivisions of accounts.

**Types of Cost Finding.** Two types of method, adapted to varying circumstances, suggest themselves: finding the cost of one individual article of product, from elements of cost traced through the whole productive process; and finding the average cost of groups of products and attaching that average cost to each article. Usually the first of these is impracticable, even when desirable, for the reason that few costs are incurred for one individual article of product alone. Indeed, we may say that no individual article of product is in ordinary business the result of costs incurred exclusively for its production. Though the cost for raw material may and usually does go exclusively to one individual article, and though much of the labor may also be exclusive, the costs for rent, insurance, taxes, stationery, power, depreciation, and innumerable other things, are incurred jointly for many products, and it is virtually impossible to say absolutely how much of any of them is chargeable to one individual article of product. Even in construction work with one job done at a time, the equipment used is almost sure to be shared with other jobs, and the general administration is common to many. We may as well give up at the start, then, any attempt to find absolutely independent costs of individual articles except in instances so rare that they are virtually negligible. This is not the same as saying, however, that only joint or average costs are worth finding. In many businesses it is desirable, if not actually necessary, to find individual costs as far as they can be found and then fall back on average costs for those elements, to be added to the individual costs, which can be found only as averages because they are always joint.

**Finding Average Costs.** The method of finding average costs is to divide the total cost in question by the number of units of product and thus get the cost per unit, or to divide the cost by some other cost and get a percentage to be added to other cost.

If, for example, a mill is producing only one kind of flour, the total cost of all product divided by the units of product, pounds, or tons, gives the cost per pound or per ton; but though it may be true that a particular ton cost more or less (because of inefficiency, waste, or what not), that ton is not now distinguishable and the fact is negligible, for some other ton must have cost less. If, again, we wish to find the cost of a specially decorated set of furniture and this set is identical with other sets except for its added decoration, we can find its cost by dividing the total cost (exclusive of decoration) of all sets by the number of sets and then adding the cost of decoration of this particular set. If, finally, we wish to find the cost of a particular article manufactured and sold and paid for, and have already found the cost manufactured and sold, we will divide the sum of the cost of all collections and the loss from all bad debts by the sum of manufacturing and selling costs of all product, to find the percentage of collection cost and loss, and then add this percentage to the cost of manufacture and sale of this individual article. This assumes, of course, that the cost of collection, including loss from bad debts, will be the same for this individual article as the average of others; but it almost certainly will run higher or lower (for if the bill is paid there will be no loss from bad debt, and if it is not paid all will be lost); and yet since the business is run not for this particular article but for many articles, this article must bear its share of many such costs.

**The Source of Average Costs.** Cost figures may of course be kept as purely statistical, without other connection with the books than common origin with book figures; but errors in statistical figures are quite as easy to make as errors on the books, and, subject to no test of error through anything corresponding with the trial balance, they are more likely to carry undiscovered error than accounting figures. For this reason it is desirable that cost figures be incorporated in the books through clearing and controlling accounts. By the use of labor-saving devices, this may be accomplished with little labor and with reasonable assurance that under proper accounting methods omissions and duplications have not been made. When cost figures are tied up with financial figures on the books, average costs are found commonly directly



from the books by dividing the costs, as shown by ledger accounts, by the product, thus getting average costs per unit — whether those average costs are costs for single elements of total cost, are combinations of elements into a group or sub-total cost, or are final costs. If, for example, we manufacture four classes of articles, and use twelve processes, but different classes of articles go through different processes, we can so arrange our ledger accounts as to furnish average costs for each class. Suppose the processes for each class of articles are as tabulated below, showing by crosses in the column for each class of article what processes each goes through (the line of the table indicating the process); and suppose the cost for each process is the same whichever class of article passes through it.

<i>Process</i>	<i>Class A</i>	<i>Class B</i>	<i>Class C</i>	<i>Class D</i>
1	X	X	X	
2		X		X
3	X	X	X	X
4		X	X	X
5	X	X		
6	X			
7		X	X	X
8	X	X	X	X
9				X
10			X	
11		X		
12	X	X	X	X

For each process the costs, of whatever nature, will already have been gathered to the clearing account for the process, by methods to be discussed later. For each class of goods, moreover, statistical records will be kept showing the number of articles going through each process. Let us now assume certain costs for each process and a certain number of articles of each class, find the cost per unit for all classes for each process, on the assumptions of the table above, and find the unit cost of each article. It is all done simply in the table below. The cost of each process is found from the books; the total of the units passing through each process is found from the records of production; the cost per unit is derived by division; the number of units of each class is taken

from the records of production; and of course charge is made to each class of product for only those processes which that class of product passes through.

Process				Class A 2000 Units cost each	Class B 1000 Units cost each	Class C 5000 Units cost each	Class D 3000 Units cost each
#	Cost	Total Units	Cost per Unit				
1	\$4,000	8,000	.50	.50	.50	.50	..
2	6,000	4,000	1.50	..	1.50	..	1.50
3	5,500	11,000	.50	.50	.50	.50	.50
4	9,000	9,000	1.00	..	1.00	1.00	1.00
5	300	3,000	.10	.10	.10	..	..
6	400	2,000	.20	.20	..	..	..
7	2,250	9,000	.25	..	.25	.25	.25
8	1,100	11,000	.10	.10	.10	.10	.10
9	600	3,000	.20	..	..	..	.20
10	1,500	5,000	.30	..	..	.30	..
11	2,000	1,000	2.00	..	2.00	..	..
12	16,500	11,000	1.50	1.50	1.50	1.50	1.50
Total \$49,150				\$2.90	\$7.45	\$4.15	\$5.05

Proof: Total cost of all processes

\$49,150

Cost of Class A, 2000 @ 2.90

\$5,800

B, 1000 @ 7.45

7,450

C, 5000 @ 4.15

20,750

D, 3000 @ 5.05

15,150

49,150

It is now a simple matter to establish a clearing account for the gathering of these costs of processes, \$49,150, and distribute them to the accounts for the goods produced. The advantage of making the distribution on the books is that when we get through closing our books we know whether anything has got into this table erroneously or has been omitted, for we shall either still find on our books some account that should be closed, or find our books out of balance.

**Finding Special Costs.** It is obvious that costs of articles made in small quantities or individually cannot be found from the ledger in the way mentioned in the preceding paragraph, for that would involve a ledger account with each special cost of each special job. This is not feasible. What is done, therefore, is to keep what in effect are controlling accounts for the special costs of special jobs and make record on cost sheets (virtually subordinate ledger pages) of the particular share of such total special costs chargeable to each job. If several articles of a kind are made,

average cost will probably be found rather than individual cost; but unless the number is large enough to make worth while the setting up of a special account for the special cost of the lot, the whole lot will be treated as one article (that is, it will be given a cost sheet for the lot — a subordinate-ledger account rather than a general-ledger account), and all costs of the lot will be posted to that sheet and then the total will be divided by the number of articles in the lot to find the average cost for each.

**The Ultimate Cost Account.** The final accumulation of costs in one or more clearing accounts will depend upon the business and the kind of information desired. We assumed a moment ago that the costs would be carried to separate accounts for classes of product. When the number of classes is small, that is probably desirable. When, on the other hand, products are numerous, varying from month to month, and particularly when they are made to special specification and not to standard order, it is only burdensome to establish ledger accounts for each kind of product. The usual practice is to have one account for all product and keep subordinate accounts for classes of product of which many are made of a kind, for lots of which few of a kind are made, and for individual articles. By the use of clearing accounts, however, as we have already seen, much detailed information may be kept along the way and yet the total may be shown on the books in a summary account. The method of securing such detailed information, of combining it into groups of costs, and of finally distributing it over products or services, may now briefly engage our attention.

**Direct and Indirect Costs.** Wherever more than one kind of product is made, it is obvious that the costs group themselves naturally into two classes: direct, those which are incurred for one kind of product only; and indirect, or joint, which are incurred for two or more kinds or even for all the kinds. The direct costs can be easily charged to the product for which they were incurred — provided that either such costs are kept in separate ledger accounts for each, or memorandum record is kept daily of those costs out of the total which should be charged to the particular groups of product. The indirect costs, on the other hand, are not easily charged to product, for usually there is no exact method of



splitting these joint costs and knowing just how much of the total is really chargeable to any product or group of products. The direct costs are usually at least two in number, direct material and direct wages, commonly together called "prime costs," and the indirect costs are usually almost multitudinous, like indirect wages (for superintendence, clerical work, janitor service, etc.), supplies used (in the storehouse, in the factory, in the office, etc.), insurance, taxes, maintenance of buildings and of machinery, etc., etc. Without going into details, we will examine the method of finding the charge to product for each of these types of cost.

**Direct Labor.** If only one type of product is made and only one type of service is rendered, all labor devoted directly to production or service should be charged to an account separate from other labor, so that the total charge for direct labor may be compared with the output. This charge can usually be found directly from the payroll. If, on the other hand, several products or services are provided, a wages account for each is likely to be undesirable, and hence analysis must be made not only of the payroll but of individual items on the payroll. This is accomplished best, usually, by time slips, on which for each employee engaged in direct production is a daily or weekly sheet showing how much of his time and wages have been devoted to each kind of production. A summary of these sheets gives the basis for a bookkeeping entry debiting the various cost accounts (Process #1, or Special Costs, or Goods-in-Process, or whatever the particular method may call for) and crediting Wages. A posting of the item from the time slip to the cost sheet for the individual product, or for the lot, gives the cost in detail, where that is required, to agree with the controlling account (e.g., Special Costs, or Goods-in-Process). The payment of wages is debited to Wages; and then Wages gives the statistics of wages, but the cost has been passed on to a group account. A credit balance on Wages shows a liability for wages.

**Direct Material.** A well organized factory or service station will require requisition slips for all material taken from the store-room — as a protection against waste and thievery. These slips may well be used as a record of charges for material (after correction for materials returned). They are easily summarized; then

prices are attached; and an entry debiting the various cost accounts and crediting Raw Material (which represents stores in the storeroom) is made. If individual or lot costs are desired, an entry is made to the cost sheet (a virtual subordinate ledger) as well as to the controlling account.

**Other Direct Costs.** Occasionally other direct costs are involved, such as special freight, special insurance in case of extra risk, outside purchases or fees; and these will be handled in the same way as direct wages and material — including entry on cost sheets if subordinate-ledger accounts are kept.

**Burden Costs.** If all direct charges are now taken care of, the task of distributing joint costs, commonly called “burden,” or “overhead,” must be undertaken. The very essence of these costs is that because they are joint, there is no known absolutely right way of dividing them. To take a simple illustration: we need an engineer and a fireman, perhaps, to run our power plant; increasing our output of certain articles calls for an increase of 10% in the power produced by our power plant; this increase in power may not necessitate more help in the power house; and yet if the fireman is already working at full capacity the increase will necessitate a new man. Is it true, then, in case no new man is hired, that no additional charge for power wages should be made to the articles of which production is increased (because the cost is not increased), and in case a new man is employed that all the wage cost of the new man should be charged to the additional articles produced? There is always something to be said on the other side. Most divisions of joint cost are more or less arbitrary — though they may have so much sound sense behind them that for practical purposes they are satisfactory. The task of distribution of burden is to make charges as fair as it is possible to make them without making the labor of distribution unnecessarily great and therefore prohibitively expensive.

**The Importance of Fair Distribution of Burden.** Though it is true that distribution of joint costs is usually more or less arbitrary, because the very nature of them makes perfect distribution impossible, there is always a way to approximate a correct distribution, and a distribution based on a reasonable approximation is far better than one wholly arbitrary. Every joint cost has



some relation to the product, and virtually every product has in it some (usually much) joint cost. If, then, the joint costs are analyzed, so that the relation of each to the various articles of product is found, and then each joint cost is distributed over the product with regard to such relation, the distribution, though more or less arbitrary at best, is far more nearly fair than one which is not based on analysis of burden but distributes all burden over all product in blanket form regardless of what analysis might show. If as a consequence of arbitrary distribution the cost of certain products or services is reported to be high and of others to be low, whereas distribution on an analyzed basis would reverse this, the neglect of analysis may be serious. The business may be selling largely at a low price the product shown by its cost accounting to be low, and may be selling very little of the product shown as of high cost, whereas, in reality, it will be selling at a low price what really costs it much (and that may be the reason for sales), but it cannot recoup itself by selling at a high price what really costs it little: the bad accounting has led the manager to make prices that create a demand for goods on which loss is suffered and destroy demand for goods on which profit would be made if the goods could be sold at the price used. Distribution of burden, then, should be as fair as feasible; and sometimes it constitutes so large a part of the total cost, seventy-five per centum, for example, that careless distribution seriously disturbs the value of cost figures.

**General Methods of Distributing Burden Costs.** As we have already observed, burden may be distributed either as a blanket charge, on the same basis for all product, or it may be analyzed and then be distributed piecemeal, so to speak, some parts in one way and some in another. Indeed, the burden may be analyzed and the result of the analysis may lead to the conclusion that a blanket method (distributing all burden on all production on the same basis) is satisfactory. Three forms of blanket distribution are common: total burden distributed to the various divisions of product in the ratio of (1) the direct labor hours in each division of product to the total direct labor hours of all product; (2) the direct wages in each division of product to the total direct wages of all product; (3) the sum of direct wages and raw material in each



division of product to the total direct wages and raw material in all product. Other blanket bases are possible and in use, but these are common and typical. The piecemeal methods of distribution are many, but though all distribute different portions of burden on different bases, as indicated by analysis of burden, all combine into one basis as many kinds of burden as possible, so that the labor of distribution will be reduced to a minimum. We will first observe the blanket methods.

**Distribution of Burden on Labor Hours.** Mathematically the distribution of burden on labor hours is easily made. If the total direct labor hours of a factory are for the year 1,000,000, and the hours on a lot of goods are 10,000, one one-hundredth of all the hours were spent on that lot of goods. Under this method of distribution of burden, then, one one-hundredth of the total burden is chargeable to this lot of goods. More directly, if the total burden is \$400,000, the burden rate is forty cents an hour (\$400,000 divided by 1,000,000), and the charge to this lot of goods for burden is \$4,000. Whether this is sensible or not depends wholly on the circumstances of the case. Our burden charges consist of all sorts of things, such as heat, light, depreciation of buildings and of machinery, clerical service, and bookkeeping. If some product is made by machinery and some by hand, the first involves power and maintenance of machinery, and the other involves neither; so that a blanket rate based on hours will not serve. If some product requires a great deal of room for manipulation, as in curing or drying, and other product requires little, one involves large cost for rent and heat, and the other little; and a blanket rate based on hours gives wrong figures. If, on the other hand, the product is so nearly of the same type that every hour of labor going into any product involves approximately the same cost for the building, for power, for machinery, for supervision, for clerical service, and for a hundred other things, as every other hour on any other product, this is a satisfactory basis.

**Distribution of Burden on Wages.** The substitution of wages for labor hours is likely to simplify the task of burden distribution, for wages are more likely to be known, for other purposes than cost accounting, than are hours; but the number of cases in which burden can be distributed adequately on a wage basis is much

smaller. The cost of housing a factory is appreciable in most businesses; but a man paid ten dollars a day does not require twice as much space or light or heat as one paid five dollars a day, nor five times as much as a boy paid two dollars a day — unless, indeed, he is operating a machine that requires the extra space, or is handling material that is bulky. As a matter of fact, these last suppositions are not true of most factories, for it is quite as likely to be the employees on the lower wages who are running the larger or heavier machines and handling the bulkier materials. The probability is that burden charges have no constant relation to wages. When, however, they have such a constant relation, wages constitute a good basis for the distribution of burden. If burden is \$400,000, and wages are \$1,000,000, the burden is 40%; and 40% of the amount charged to each job for wages would be added for burden.

**Distribution of Burden on Prime Cost.** To avoid the unfairness of distribution on either hours of labor or wages, sometimes prime cost, or the sum of the cost of raw material consumed and wages, is used. If the total burden for the year is \$400,000, the cost of raw material is \$300,000, and the wages are \$1,000,000, a ratio is established of  $\frac{400,000}{1,300,000}$ , or 30.7¢ burden chargeable for every dollar of wages and raw material. This is simple, and easily applied, and fair when conditions are right. Clearly, however, when high-wage men are working on high-cost material by hand for one job, and low-wage men are working on low-cost material with high-cost and high-power machinery for another, conditions are not at all adapted to this sort of blanket rate — for here the burden charged to the first job is high, and to the second job is low, and yet all the cost for depreciation of machinery and for power, and much of that for housing, should be charged to the second job and little of these to the first, and the first should not have any charge that the second should not also get — except possibly supervision, and usually it is the low-rate men rather than the high-rate men who need that.

**Other Blanket Methods.** Observation of the three methods just described makes clear that the conditions under which any blanket method is good are limited to those of something approaching similarity not only of product but of conditions of pro-



duction. If the difference between products is chiefly a difference of one or two elements, and the other elements of cost go along parallel with them, a blanket method is both easy to apply and satisfactory; but the moment some costs go in one direction and others in another, something else than a blanket method must be adopted.

**Brief Analysis of Burden.** The subject of distribution of burden is big enough for a book much larger than this. We can hope here, therefore, only to note the principles of distribution, and can observe only very briefly the methods of distribution on an analyzed, as contrasted with a blanket, basis. For this we must note that burden naturally has relations with at least five aspects of production, and that a minimum analysis will proceed to make distribution with regard to those aspects — though possibly in practice a common method may apply to two or more of them. These five are Raw Material, Labor, Buildings, Machinery, and Administration. Virtually every element of production can be attached as a part of, or tributary to, one of these. It will be found, moreover, that burden costs do not necessarily run parallel in all five of these aspects: that is, the burden costs connected with raw material, like insurance, may go up with a greater value of raw material going into the product, while this very change in the character of the raw material may make possible the use of less supervision of labor, less heat and light, less power and wear and tear for machinery, and less expense of administration. Installation of automatic machinery may increase heavily maintenance and depreciation of machinery, but at the same time reduce supervision of labor, space required for housing the work, and administrative expense. These illustrations make clear that anything approaching a scientific method for distribution of burden will recognize several different bases — though of course where two different bases give the same method of distribution they may be combined. The most common method of attaching burden as a result of analysis (contrasted with blanket methods) utilizes a "machine rate," so-called, for a considerable part of the distribution. Without attempting a complete discussion of machine rates, or even of any one out of the variety in use, we may well note the underlying principle.



**The Principle of Machine Rates.** In factories making use of a variety of machinery, of which not all is used uniformly for all product, a large part of the burden is found to be related to the various machines, and can be distributed on the basis of the number of hours that the various machines were employed on the various products. This, however, does not throw all machines together to give machine hours, as could be done to form a blanket rate substituted for the labor-hour rate, but establishes a different rate for each machine or type of machine on the strength of an analysis of each machine's requirements of burden. The method of procedure is roughly as follows: all costs connected with the land and buildings are gathered, to find the total cost for space; this space cost is then apportioned to various departments, like storehouse, power house, shop, and office, on square feet or cubic feet of space occupied; the shop share of space cost is then apportioned among the machines, or types of machines, in the shop; the total power costs are gathered, and this is apportioned among machines on the basis of horse-power consumption; then costs peculiar to each machine or type of machine are calculated, such as insurance, taxes, maintenance, and depreciation; the sum of all such costs for each machine or group of machines is then divided by the number of working hours for the period used for figuring costs (usually a year), and the quotient is the hour-rate for this machine — the rate to be charged per hour to all product making use of this machine. The details of calculating and distributing space cost, power cost, etc., are handled differently under different machine-rate methods; but in general principle virtually all aim at the same thing — though the difference in results is sometimes wide because of wise or unwise handling of the figures obtained. Both good and bad machine rates are in use.

**Supplements to Machine Rates.** The machine rates, even where they are most complete, do not take care of all burden — for they cannot except by mere arbitrariness, which it is their purpose to avoid, take care of the burden connected with stores, with general supervision of labor, or with administration, and they have taken care of space costs only so far as space costs are connected with the machines. These remaining items of burden may be attached in various ways, though the most common is as

percentages of the costs with which they are directly connected. Some of these are illustrated, without comment, in the fourth cost sheet shown below. Roughly, this completes our burden charges to be distributed for production — though we have not discussed minor items that will fall into the general plan, or burden for selling cost, which follows the same general principles.

**Cost Sheets Illustrated.** In order that we may see these four general methods together, summary cost sheets are appended, by way of review or summary, for the same product under the four plans described. The difference in cost shown throws no credit or discredit on any method: the fact is that each method is good in its place, and no two of these methods would often produce quite the same result. It happens in this case that the machine-rate method was adapted to the circumstances and the others were not.

<i>Cost Sheet</i>		<i>Cost Sheet</i>	
<i>Burden on Hour Basis</i>		<i>Burden on Wages Basis</i>	
Raw Material	\$7.00	Raw Material	\$7.00
Labor, 12 hrs. @ 80¢	9.60	Labor, 12 hrs. @ 80¢	9.60
Burden, 12 hrs. @ 40¢	4.80	Burden, 40% of wages	3.84
	<u>\$21.40</u>		<u>\$20.44</u>
<i>Cost Sheet</i>		<i>Cost Sheet</i>	
<i>Burden on Prime-Cost Basis</i>		<i>Analyzed Basis</i>	
Raw Material	\$7.00	Raw Material	\$7.00
Labor, 12 hrs. @ 80¢	9.60	Additional, 10%	.70
	<u>\$16.60</u>	Labor, 12 hrs. @ 80¢	9.60
Burden, 30.7% of Prime	5.10	Additional, 12 hrs. @ 3¢	.36
	<u>\$21.70</u>	Machine Rate, 3 hrs. @ 25¢	.75
			<u>\$18.41</u>
		Administration, 5%	.92
			<u>\$19.33</u>

It will be observed that the total burden in the last case is \$2.73 — much less than in the other three cases. This is because this job happened to involve somewhat less machinery than most jobs, whereas under all three of the other methods the use of machinery is not recognized as a separate element and each job is charged for an average use of machinery whatever actual use it makes of machinery. This job, moreover, had more raw material in proportion to labor than the average job, and hence is charged more for

burden on the prime-cost basis than under any other, for this basis puts the same weight on raw material as on labor. Lastly, the rate of wages here is below the average, and hence less is charged on the wages basis than on the labor basis.

**Interest as Cost of Production.** Much has been written of late about the relation of interest on investment — as investment in machinery, in stores carried in the storeroom, etc. — to costs. This is no place to argue the matter, and the argument heretofore published indicates that to great extent people who differ are talking about different things and obviously enough cannot be brought to a common ground by any discussion here. One thing does concern us here, however, and any theory which neglects it is in practice dangerous, however interesting or however futile it may be as economic speculation: to attempt to compare the cost of two products, one of which is made largely by machinery and the other of which is made chiefly by hand, and omit from the comparison all recognition of invested capital is to run the risk that the figures, of which the purpose is to make comparisons, will be incomparable and hence misleading. If two products cost each \$5.00 for raw material and \$8.00 for labor and \$2.00 for burden <sup>1</sup> exclusive of interest on the value of investment used, but one is made wholly by hand and the other involves the use of a machine costing \$500, it is nonsense to say that, for any purpose for which accounts are kept, the two products are reported comparably when we say that each cost \$15.00 only. The purpose of cost finding is quite as much comparative as absolute. If the products cost the same, they may be sold for the same figure and yet yield the same profit. Then a sale of one for \$18.00 means the same thing as a sale of the other for \$18.00. If that is true a man whose product costs \$15.00, though he uses machinery and does not count it, should sell his goods at the same price as one whose product costs \$15.00 without using machinery. If reply is made that the cost is the same for the two articles, but one must yield more profit than the other because the owner of the machine must meet not only costs but additional profit to cover the use of his investment, the dispute is merely over the use of terms, cost *vs.* profit; but in that

<sup>1</sup> The burden in the machine-made product includes, of course, maintenance and depreciation of machines, so that capital has not been depleted.



case it is admitted that the \$15.00 figures for the two products are not comparable, for one product needs to have added to it profit of one magnitude and the other profit of another. Yet one of the purposes of our cost accounting is to get comparable figures — figures that enable us to see what prices must be obtained for various products to make them worth our making, or, if prices are independent of our operations, what articles we can and cannot afford to make. Yet if after we have got our comparative figures we must go over them again and calculate different rates of profit to be added to different articles to bring them up to necessary standards of selling price, we have vastly increased our labor for the mere sake of maintaining a point of pure theory about the relation between cost and profit (virtually every well-known economist considers interest a cost). The convenient thing, the natural thing by cost-accounting methods, the thing which accords with economic terms and usage, is to treat interest on investment as (1) one of the debits to operation, so that we may make comparisons between different articles of production by putting them on the same basis, and (2) one of the credits to income on investment in the business. The effect of this is to charge product, through burden (particularly through machine rates, and virtually all machine-rate calculations in use include interest on the investment in the machine), and to credit Interest Earned: a cost of production (and hence a reduction of profits below what they would be if interest were neglected), offset by income on investment — a charge to one department of the business, so to speak, by another department, and producing comparable figures of production in the department charged.

**Interest as Cost on the Balance Sheet.** One objection made to treating interest as cost of production is that for goods (finished or unfinished) left on hand at the end of a period the balance sheet shows not only external cost, cost out of pocket, but also, to the extent of the interest element in the goods still on hand, cost to one department of the business (the factory) which includes a profit (interest) for another department; and hence the profits are to that extent only on paper and the assets are also to that extent only on paper. This objection would have much more weight if there were any general principle that could be applied to all the

items on a balance sheet alike; but we have already seen that some are preferably carried at cost, and some at market, and some at collectibility, and some at gross, and some at net. Each item, in a sense, has its formula for interpretation. Then why not goods in process and finished goods?

**Another Phase of Interest as Cost.** Any who wish further to consider interest as cost are urged to consider the case of the purchase of a leasehold as given on page 372. By investing in the purchase of a lease, the purchaser was able to hire for \$10,000 a year a building worth \$13,000 a year. The amortisation of the lease, however, amounted to \$1,841.74 in the first year. Does this mean that the rent in the first year was \$11,841.74 (\$10,000 for the landlord, and \$1,841.74 for amortisation)? For the first year the purchaser of the lease had \$23,165.21 locked up in the hands of the buyer, and none of it could be ever got back except as he realized a saving of \$3,000 on his rental charge. The original calculation, which fixed the value of the lease, calculated one year's interest on this investment as \$1,158.26, and counted it as a part of what the purchaser must give up in return for the \$3,000 that he was to get in a saving of rent — as a part of the cost. What sort of accounting information should we get in this case if we entered rent as \$11,841.74 and let it appear that \$23,165.21 of the purchaser's money was lying idle? How should we find costs of doing business, percentages of net profits from sales, and other figures of importance for comparative purposes, if rent were taken here at \$11,841.74, and we had a similar store next door which, since the old lease had recently expired, was now paying \$13,000 in cash as rental? Comparisons cannot be made without comparable figures, and if some figures are on a current basis and others are partly on a capital basis, adjustment must be made to convert the capital figures into current; but whether one calls the item of adjustment cost or profit is largely a matter of taste.

**Finding Costs Illustrated.** By way of summary, ledger accounts are shown below for a simple series of cost transactions. No attempt is made to show more than a few typical accounts, but enough are shown to indicate the general course of procedure. For simplicity, small amounts are used for financial figures, and they may be taken as hundreds or thousands of dollars if one can

appreciate them better in that way. The debits to the following accounts represent dealings with the outside world: Raw Material, Fuel, Rent, Insurance, Taxes, Administration (cash part only). These, with the corresponding credits to Cash and to Accounts Payable, were put on the books in the ordinary course of business independently of any special thought of cost accounting. The other entries for costs follow: a debit to Manufacturing (the controlling account for costs of product, identical with Goods-in-Process) and a credit to Raw Material for stores issued; a credit to Wages for pay roll, with a debit to Manufacturing for direct labor on jobs, to Power for power-house wages, to Superintendence for supervision of labor; a debit to Wages and a credit to Cash for actual payments made on wages. A debit to Power and a credit to Fuel for fuel used in the power house; and distribution of power costs by a credit to Power and a debit to Heat and to Burden (the latter for power used in the manufacturing processes); a debit to Space Cost and a credit to Heat; a debit to Space Cost and a credit to Rent; a credit to Space Cost and a debit to Burden for the share of space cost chargeable to direct manufacturing processes, and to Administration for the share chargeable to general purposes; a debit to Burden Interest and a credit to Interest Earned for interest on the investment in manufacturing facilities. a debit to Burden and a credit to Insurance, to Burden Interest, to Taxes, to Superintendence, and to Administration, to close all but the first; a debit to Manufacturing and a credit to Burden to close the latter; a debit to Finished Goods and a credit to Manufacturing for the goods transferred from the factory to the warehouse, at cost as shown by the cost sheets; a debit to Sold Goods and a credit to Finished Goods for the cost of goods sold (i.e., for the same amount as the debit to Finished Goods when the particular goods sold were sent into the warehouse). It will be observed that several clearing accounts have been used: Power, Space Cost, Administration, Burden, and Manufacturing.

#### RAW MATERIAL

Accounts Payable	246		Manufacturing	218
	246		Balance	28
Balance	28			246



## WAGES

Cash	299	Manufacturing	315
Balance	38	Power	4
		Superintendence	18
	<u>337</u>		<u>337</u>
		Balance	38

## FUEL

Cash	19	Power	16
		Balance	3
	<u>19</u>		<u>19</u>
Balance	3		

## POWER

Wages	4	Heat	3
Fuel	16	Burden	17
	<u>20</u>		<u>20</u>

## HEAT

Power	3	Space Cost	3
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## RENT

Cash	23	Space Cost	23
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## SPACE COST

Heat	3	Burden	18
Rent	23	Administration	8
	<u>26</u>		<u>26</u>

## INSURANCE

Cash	4	Burden	4
------	---	--------	---

## BURDEN INTEREST

Interest Earned	5	Burden	5
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## TAXES

Cash	6	Burden	6
------	---	--------	---

## INTEREST EARNED

Burden Interest	5
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## SUPERINTENDENCE

Wages	<u>18</u>	Burden	<u>18</u>
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## ADMINISTRATION

Cash	<u>11</u>	Burden	<u>19</u>
Space Cost	<u>8</u>		<u>19</u>
	<u>19</u>		<u>19</u>

## BURDEN

Power	<u>17</u>	Manufacturing	<u>87</u>
Space Cost	<u>18</u>		
Insurance	<u>4</u>		
Burden Interest	<u>5</u>		
Taxes	<u>6</u>		
Superintendence	<u>18</u>		
Administration	<u>19</u>		
	<u>87</u>		<u>87</u>

## MANUFACTURING

Raw Material	<u>218</u>	Finished Goods	<u>580</u>
Wages	<u>315</u>	Balance	<u>40</u>
Burden	<u>87</u>		
	<u>620</u>		<u>620</u>
Balance	<u>40</u>		

## FINISHED GOODS

Manufacturing	<u>580</u>	Sold Goods	<u>500</u>
	<u>80</u>	Balance	<u>80</u>
	<u>580</u>		<u>580</u>
Balance	<u>80</u>		

## SOLD GOODS

Finished Goods	<u>500</u>
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## CASH

Sundries	<u>362</u>
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## ACCOUNTS PAYABLE

Raw Material	<u>246</u>
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It will have been observed that though here all costs go ultimately to Manufacturing, some go indirectly, for we wish to get certain

statistical figures by the way. Some wages, for example, go directly to Manufacturing, some to Power, and some to Superintendence — but these latter are closed in turn to Manufacturing. These figures give the following trial balance:

*Trial Balance*

Raw Material	28	
Wages		38
Fuel	3	
Interest Earned		5
Manufacturing	40	
Finished Goods	80	
Sold Goods	500	
Cash		362
Accounts Payable		246
	<u>651</u>	<u>651</u>

All accounts here but two are real. Sold Goods is to be transferred to Trading, and Interest Earned to Income.

**Ancient or Current History?** The closing of the books as described above has been on the assumption that the year's business was over before the closing entries were made. This may do for books, but it will not do for cost sheets or for guidance in quick decisions during the year. One cannot wait until December 31 to know the cost of burden on jobs to be bid for in March, and if cost sheets could not be filled out until after Dec. 31 for any year most of them probably would never be filled out at all. The method actually used is to apply the experience of the past to the calculations of the present, adjusted to the changed conditions of the present, and to employ those adjusted figures for current work. The figures for raw material and for labor may be known currently: only the burden charges need estimate; but if careful record has been kept of past burden (especially if it is an analyzed and not a blanket burden), adjustment to current changes may be readily made. Then, in order to show what burden has actually been absorbed by jobs, entry is made on the books debiting Manufacturing and crediting Burden (or whatever accounts are kept for burden) whenever burden is calculated and entered on cost sheets. This debits Manufacturing currently for actual raw material, for actual wages, and for estimated burden; and it credits Burden



currently for the estimated burden charged to jobs. Burden will not be debited, however, until actual costs of burden are known at the end of the period, as the other accounts are closed to it. When it is so debited for actual costs the balance of the account, which is the difference between the costs as found and the estimates (corrected by constant observation) actually used, is the measure of inaccuracy — a help to greater accuracy in the subsequent period. This discrepancy is then transferred to Manufacturing to bring that account into agreement with the final facts. Where the work is well done, the final adjustment at the end of the period is trifling in amount.

**The Purposes of Cost Accounting.** Now that we have seen what cost accounting can do, let us notice what we should have in mind as the purposes that it ought to serve. These are three: (1) to guide in price-making, when we can make prices; (2) to guide in eliminating waste and other unnecessary expense; (3) to guide in deciding what we had better do and what we had better avoid. The first of these is accomplished by showing the total cost of specific products or services. The second is accomplished by showing details of cost — elements, processes, groups of elements, groups of processes. The third is accomplished by showing either that the total cost is so great that no satisfactory margin of profit remains, or that some specific elements cost so much as to be not worth while, even though other costs are not excessive. In this last case, we may find that still it pays to manufacture the product, for we may have some elements or processes contributed from outside of our own establishment. If we did not have detailed costs we could not know that this is desirable. We may, on the other hand, decide that it is worth our while to equip ourselves to do the work inside, even at apparent greater cost, for dependence on others is often too hazardous. Our cost accounts can at least indicate to us how much independence costs, and this we should know.

**Wide Applicability of These Principles.** What has been said of finding costs for particular products applies equally to various kinds of services, like those rendered by railroads, electric light companies, hospitals, schools, and hotels, and to selling organizations like department stores. An important element in the ad-

ministration of department stores, for example, is the lay-out of the store, the geographical relation between departments, and the distribution of space costs so that each department shall have a fair opportunity to show a profit and yet not have any unfair advantage over other departments. In all businesses, one type of cost important to watch is the fixed and semi-fixed charges — costs that are not increased, or proportionally increased, with an increase in production, or decreased proportionally with a decrease in production. A recognition of these costs, with watchfulness to make fullest utilization of each of them, is fundamental in good business management, for it does more than almost anything else to reduce costs per unit of product. The burden which they comprise must be borne somehow, and policy must often be guided by the necessity of procuring business enough to absorb them. Any type of accounting that neglects these principles is almost sure to fail in some of the services that it might render.

### QUESTIONS AND PROBLEMS

1. An institution combining educational, rehabilitative, and industrial efforts, maintains a laundry, a market-gardening plot, a wood-working shop, and a printing shop. It pays low wages, though different for different work, on a day-wage plan, because the inmates are given instruction and special care. A rough accounting method is desired for finding the costs of products of the four departments indicated above.

Three general methods have been suggested as follows:

- (a) attaching all cost except raw material (and even that in the market-gardening) to product on the basis of the number of hours of labor — i.e., dividing all the costs (except material) of these four productive enterprises by the number of hours of labor spent in these enterprises, and thus find a cost of work per hour, which, multiplied by the number of hours of work in the particular product, gives (with the raw material cost) the total cost of the product.
- (b) using machine-hours as well as labor-hours, and dividing all costs, as before, by the total of the number of labor-hours and the number of machine-hours, obtaining thus a rate for either labor-hours or machine-hours, and making to each product a charge equal to this rate multiplied by the combined labor-hours and machine-hours spent on the product.
- (c) distributing costs among departments, in accordance with the benefit which the several departments are supposed to receive

from the expenditure, and then using within each department for distributing departmental costs to the several products of that department the method described under (b) as applying to all departments together.

Comment upon the serviceability of each of these methods for this institution.

2. Department A of a business is devoted entirely to producing fine cabinet work on special orders by combined hand and machine production, the former predominating. Department B makes standard articles, of inexpensive wood, on machines constructed for this production and requiring little labor and less supervision. Department C takes care of a variety of orders, chiefly the manufacture of cheap novelties, and utilizes both hand and machine work, but the proportion of hand and machine work is constantly varying with the jobs in hand.

What comment have you to make on each of the following methods of distributing burden costs?

- (a) Finding the amount of direct labor cost in each article of product, and attaching burden as a percentage of that labor cost.
  - (b) Distributing burden between departments on the basis of comparative costs for raw material consumed in each department, and then distributing that burden within departments over the product in proportion to the number of labor-hours in each article.
  - (c) Separating all burden costs into four groups — those that are connected with labor, those that are connected with machines, those that are connected with both, and those that are connected with neither; dividing the total of those of the first group by the number of labor-hours, and attaching the quotient as an additional charge to each article of product for each hour of labor; dividing the total costs of the second group by the number of machine-hours run and charging to each article the result of multiplying that quotient by the number of hours the article was on a machine; dividing the total of the third group by the total machine-hours and man-hours combined, charging each article the quotient multiplied by the total hours of work, man and machine, spent on the article; dividing the total of the fourth group by the total of all the other costs and applying the resulting percentage to the total of all other costs for each article produced.
3. It is common to say that the cost per unit is affected by the volume of output. Show:
    - (a) how far this fact affects the number and kind of accounts to be kept, and what should be carried to them,
    - (b) how far the accounts can tell the effect of changes in output.
  4. A gas company, anticipating a rise in the price of coal, bought largely when prices were low. Prices rose so rapidly that at the beginning of the next operating year the inventory at market prices was higher than at cost by \$100,000. The directors wished to take that increase in value



into the balance sheet, and to use the increased price for the cost of consumption of coal in the subsequent year; but the treasurer refused to use anything but costs. At the end of the year profits were high, for new rates had been based on the market price of coal.

The stock of coal was still large, but the treasurer refused to carry it or to issue it above cost. The supply lasted six months, and these showed large profit. Near the end of the period, however, the community discovered that the coal was bought at the old price, and rates were forced down to their old figure. In the subsequent period the company was buying at the new price, charging at the old rates, and accumulating a deficit (the previous profits had been distributed).

From the pure accounting standpoint, omitting the questions of non-accounting business policy, should the records have been kept for the year and a half of exhaustion of old stock so as to show cost of production of gas at the old cost of coal or at the new?

Would it be consistent with good accounting to show inventories at cost, but to issue the supply for manufacturing purposes at the market price? Explain.

5. What are the functions of cost accounting? Show how they are served by the use of machine rates.
6. A factory has several machines identical in cost of operation and in product, but bought at different times, and ranging in cost from \$2,000 to \$4,000. Is the cost of the product made on the \$2,000 machines less than that made on the \$4,000 machines? Why or why not?



## APPENDIX A

### DRAFTS

THOSE who are not familiar with the handling of drafts will have difficulty in understanding the accounting for them. A brief discussion of drafts is therefore inserted here.

A draft serves as a means of transmitting funds, and as a means of facilitating collection. In the first case, it is a convenience to have funds paid where they are desired ultimately to go, and hence a draft is drawn on somebody in that place, or nearer to it than is the drawer of the draft, and given to one who desires funds in that place. In the second case, the fact that a draft is presented for payment is a strong reminder that the drawer expects the money to be paid, and sometimes a draft may be sold in advance of its due date and thus enable the drawer to realize funds earlier than otherwise.

A draft is an order of one person or firm or corporation requesting a second person or firm or corporation to pay certain specified sums, at a time designated, to a person, firm, or corporation designated. The following is an illustration:

\$1,560  $\frac{\text{no}}{100}$

*Washington, D.C., April 29, 1925*

Thirty days after sight, pay to the order of James Munroe and Company .....  
fifteen hundred sixty  $\frac{\text{no}}{100}$  ..... Dollars  
and charge the same to our account.

To JOHN ADAMS  
*Quincy, Illinois*

WILLIAM WILLIAMS & SON

Several different circumstances may be attached to both the relation between the parties concerned in a draft, and the time of payment.

With respect to the parties concerned, we will first note a name for each. The "drawer" of the draft is the active agent, the signer of it, who makes the request for payment. The "drawee" is the passive party, on whom the draft is drawn, who must ultimately pay. The "payee" is to receive the money. The drawer may also be the payee — in which case it is obvious that the purpose of the draft is not to transmit funds, for they would go to the same destination without any draft, but to facilitate collection — though sometimes when a draft is drawn payable to the drawer it is later endorsed to some one else and



serves the same purpose as if drawn to the other payee in the first instance. The drawee may or may not owe the money to the drawer. He is under no legal obligation to pay the draft in any case, unless he has signed a contract to do so, because for reasons of his own he may prefer to pay his creditor direct rather than some one else at his creditor's order; and if he does not owe the money he has no reason to pay the draft — except as an accommodation or loan to the drawer. The drawer may owe money to the payee, and draw the draft as a means of payment, or he may draw it as a means of making a loan to the payee. If the drawer wishes to borrow money on the strength of funds payable to him in the future, he may draw a draft payable at the time payment to him is due, and sell that draft to a bank — which, of course, will take out interest and pay him less than the face of the draft.

With respect to maturity, a draft may be drawn payable “at sight,” so many days “after sight,” so many days “after date.” If drawn at sight, the drawee pays it if he chooses, or refuses to pay it. If he refuses to pay it, the draft is worthless paper (but as he may change his mind later, it should not be left about carelessly). If he pays it, he keeps it as a receipt for the money paid. If a draft is payable “after sight,” it must be presented for acceptance in advance of presentation for payment, else it will never become due. Acceptance consists in writing the word “Accepted” and signing the name of the drawee across the face of the draft. If, on the other hand, it is payable “after date,” it becomes nominally due on the date indicated whether it has been previously accepted or not; but as the drawee has the option of accepting or refusing the draft, he may refuse to pay it when nominally due even though he would have accepted it (and would now pay) if it had been presented to him for acceptance promptly — giving him courteous notice of its existence. If payable “after sight,” the acceptance must, of course, be dated; if payable “after date,” no date is needed in the acceptance, because the period before maturity runs from the date of the draft itself.

A debtor cannot by drawing a draft in favor of his creditor get rid of his responsibility for the debt unless the draft is paid; for the draft may not be accepted, and it may not be paid even though accepted. The drawer, in other words, is still contingently liable on his original debt until actual payment of the draft. A transfer by the payee, moreover, holds him also responsible, by endorsement, to the transferee.

The entries for drafts are obvious when the handling of drafts is clear. The mere drawing of a draft does not in itself necessitate any entry, for the draft may never be paid or even accepted. Usually only a memorandum is made, for record, in the bill book discussed in Chapter XV. Often, however, sight drafts are entered in full at once as if

paid, for since they are due at once one will hear promptly in case they are not paid, and it is in some businesses less work to make correction entries for those not paid than to watch and remember to enter later those from which one may hear nothing (because paid and no letter of acknowledgment was sent). With time drafts, entry is customarily made only when acceptance is known. In any case, whenever entry is made for drawing a draft, the drawee is credited, for he has either paid his debt to that degree or has made a loan; and the payee is debited for the reverse reason — except when the draft is drawn in the drawer's own favor, in which case the debit is to the account representing the asset got, which is Notes Receivable if the accepted draft is kept, is Cash (less discount) if the draft is sold for cash, or is the transferee in case the draft is transferred by endorsement to some one else. The drawee, on the other hand, if he pays the draft at sight will debit the drawer and credit cash; if he accepts the draft for future payment, he will debit the drawer and credit Notes Payable. The payee will in any case credit the drawer, as the source of the asset, and will debit cash, in case the draft is paid at sight, or Notes Receivable, in case it is accepted for future payment. It will be noted that the drawee does not care *to* whom he pays the amount of the draft, but only *for* whom he pays it; and the payee does not care *from* whom he collects, but only on *whose order* he collects.

### QUESTIONS AND PROBLEMS

1. John Richardson draws a sight draft for \$1,000 on Richard Johnson, who owes him \$1,000 for merchandise purchased, in favor of S. Peterson to whom Richardson owes \$1,000 for the purchase of materials. The draft is accepted and paid. What entry or entries will be made on the books of Richardson, of Johnson, and of Peterson?
2. M. Layton draws a draft for \$537.50 payable 30 days after date on John Ames who owes him that amount due on that day on accounts receivable. Ames accepts the draft. Ten days later Layton endorses the draft over to James Smith in part payment of a debt which falls due in twenty days. Ames pays the draft at maturity. What entries will be made on the books of each of the parties concerned?
3. A B & Co. draw a draft on H I & Co. in favor of S T & Co. for \$1,000, payable in ten days. S T & Co. owe H I & Co. \$1,000 payable in ten days, and at H I & Co.'s acceptance of the draft leave it with them, asking to have it applied against their own debt. What entries should be made on the books of each of the parties concerned?

## APPENDIX B

### SIMPLE INTEREST AND BANK DISCOUNT

FOR ordinary purposes of business not connected with investment, simple interest and bank discount are commonly used. Virtually every business transaction involving the future involves in one way or another interest or discount. Even when no mention is made of interest or discount they are likely to be taken into consideration in the bargain. Theoretically in that case the books should show the facts; but usually the amount is too small, or too uncertain, or too much involved with other things, to make worth while the recognition of interest unless it is named as a part of the bargain — though in long-term transactions involving investments it is always worth recognition in the accounts. When goods are sold with terms of payment in the future, interest is an element in the price, even though not named; for one can always buy cheapest for cash; but it is not usual to attempt to distinguish that part which is interest and that which is the equivalent of the cash price of the goods.

Where interest is involved in a transaction with a negotiable instrument, however, a note or a draft, it is always taken into consideration and entry — unless, indeed, as in rare cases, of which we shall observe some later, interest is shown by the consideration to be not really involved. Notes may or may not bear interest. They do not unless interest is specified in the text of the note. If they do not bear interest, they are not worth face value until the day when they become due — for the owner must until then wait for his money, and he expects compensation for waiting. If, therefore, I wish to borrow money, and wish to give my promissory note payable in 60 days without interest as evidence of my debt, I must make the note for a larger amount than the amount that I wish to borrow; for no one will (except as a matter of charity) lend money to-day and wait without compensation two months for repayment. The note must be enough larger than the loan to cover interest on the loan for two months. If, on the other hand, the note bears interest, it will be worth its face value, for the delay in payment is, by the terms of the note itself, to be compensated by a payment at maturity larger than the face of the note. A sample form of note follows. If it did not bear interest, the words “with interest” would be omitted. A place of payment may or may not be specified. When not so specified, the usual place of business of the maker of the note is understood.



\$7,600  $\frac{\text{no}}{100}$

*Washington, D.C., Jan. 1, 1924*

Sixty days from date I promise to pay to the order of the United States National Bank seven thousand six hundred  $\frac{\text{no}}{100}$  . . . . Dollars, for value received, with interest.

X. Y. ZEE

The words "for value received" are deemed to make the note legally collectible, for they make it a part of a contract; whereas without these or similar words the note would be a mere promise, and promises without consideration are not binding at law; so in default of these words burden of proof of legal claim is placed on the holder of the note in case payment is refused, whereas when these words are attached the burden of defense is on the maker of the note if he refuses to pay.

When the compensation for the use of money is made in addition to the face of the note, so that the payee of the note collects more than its face, it is called "interest," whether actually it is paid in advance, during the life of the note, or at its maturity. When the compensation is not in addition to the face, that is, when the payee collects only the face of the note but gets his interest from the fact that he originally lent (or otherwise gave value) less than the face of the note, it is called "discount." The face of a note plus any interest to be paid at maturity is called the "amount"; and the face of a note minus the discount is called the "present worth." These terms, moreover, are not confined to notes, but are used of all values subject to interest and discount.

The calculation of interest may be made in many ways. The simplest to understand and the easiest to apply is the "six-per-cent." method. Whatever the actual rate of interest, six per cent. is used and then adjustment is made for any difference between six per cent. and the actual rate. The reason for this is that six per cent. gives a number of figures easily subdivided, so that most of the calculation can be done "in the head." Six per cent. a year is the same as one per cent. for two months, and for purposes of figuring interest two months is taken practically for most business transactions as sixty days. So six per cent. a year is one per cent. for sixty days; but sixty is divisible by two, three, four, five, six, ten, twelve, fifteen, twenty, and thirty, and therefore almost at a glance one can find the interest for any number of days. The days not seen at a glance, however, are combinations of days that are seen at a glance. Let us try a few illustrations.

What is the interest on \$247.18 for three months and eighteen days at six per cent.? To find the interest for two months we have but to

point off two decimal places (one per cent.). For an additional month we take half of what we already have and add it. For six days we have merely to point off three decimal places (for six is one-tenth of sixty, and for sixty we point off two); and so for eighteen we may either write down \$.247 and add to it double itself, or multiply our original figure, 247.18, by three, but write the product down one place farther to the right than our figures derived from 60 days. The whole calculation, then, with all the work, is as follows:

<i>Method I</i>	<i>Method II</i>
\$2.4718 (2 mo.)	\$2.4718 (2 mo.)
1.2359 (1 mo.)	1.2359 (1 mo.)
.2472 (6 ds.)	.7415 (18 ds.)
<u>.4944 (12 ds.)</u>	<u>\$4.45</u>
\$4.45	

What is the interest on \$615.23 for seven months and seventeen days at 4%? Without other explanation than can be given parenthetically in the solution, the working out follows.

\$ 6.1523 (two months)
12.3046 (four months — twice two months — building up toward seven)
3.0761 (one month — half of two months — to complete seven)
1.5381 (fifteen days — one-half of one month)
<u>.2051 (two days — one-third of six days)</u>
\$23.28 (at 6%)
<u>7.76 (less one-third)</u>
\$15.52 (at 4%)

Though theoretically there is no reason why it should be so, in practice the rate of discount is usually higher than the rate of interest. If I borrow \$500 and give my note for \$500, with interest, for two months, at the end of the time I pay \$505 — supposing interest to be at 6%. If I make a note for \$500, payable in two months without interest, and discount it, I get \$495 and at the end of the time pay \$500. In the first case I pay \$5 interest for the use of \$500, and in the second case I pay \$5 interest for the use of \$495. In the second case I pay interest on the face of the note, though I borrowed only the present worth of it. This discount is not true discount, which will be discussed in Appendix C, but “bank discount,” so-called. It is the discount commonly taken by banks, and for short terms between man and man. When banks, moreover, make loans on notes bearing interest, they usually add the interest to the face of the note, take the discount on the sum of face and interest, and give the borrower the balance. They thus get their interest in advance.

Let us now observe a few notes and find their value.

<i>Date of note</i>	<i>Amount</i>	<i>Term</i>	<i>Due</i>	<i>Bearing Interest</i>	<i>Value Jan. 1</i>	<i>Value Feb. 1</i>	<i>Value Mar. 1</i>
Jan. 1	1000	2 mos.	Mar. 1	None	990	995	1000
Jan. 1	1000	2 mos.	Mar. 1	6%	1000	1005	1010
					(at a bank)	(at a bank)	
Jan. 1	1000	2 mos.	Mar. 1	6%	999.90	1004.95	1010

If the first note mentioned above is discounted on January 1 or on February 1, the interest is paid in advance. The purchaser or discountor, on the other hand, is collecting money in advance of rendering the service. The second note is always, except at a bank (and supposing it is good), worth its face, and the longer it is held the greater is the accrued interest upon it; the third is the same note as the second.

If a note is given in payment of a debt, it may for the purpose of paying the debt have a value different from its market value. If a man buys \$1,000 worth of goods on January 1 with a four months' term of credit, and then on March 1 gives his creditor a note payable in two months for \$1,000, what is the note worth? It is worth \$990; and it could be discounted for that only (at 6%); but for the purpose of paying the bill it is worth \$1,000 and must be credited to the customer at that figure; for it calls for \$1,000 when the \$1,000 is due and hence is good payment. The simple fact is that neither the note nor the merchandise is worth \$1,000 (else why was four months given for payment?), and one is as good as the other.

### QUESTIONS AND PROBLEMS

- Find the interest on \$789.66 for 77 days @ 7%.
  - Find the interest on \$2,240.98 from February 1 to June 30 @ 5%.
- A holds two notes which he discounts on February 1 at his bank. The first is for \$550, is payable on February 28, and does not bear interest. The second is for \$1,270, is dated January 1, is due on March 15, and bears interest @ 5%. How much will the bank give him for each note if its rate of discount is 6%?
- A has a note for \$2,000, dated January 1 and due July 1, bearing interest @ 5%. On March 1 A gives the note to B in exact full payment of a bill. On July 1 B collects the note. What entries for the note will be made on the books of A and of B on March 1 and on July 1?



## APPENDIX C

### COMPOUND INTEREST, COMPOUND DISCOUNT, AND ANNUITIES

WHEN a loan or other financial relation has a long existence, its value cannot be determined by a multiplication of the annual rate of interest by the term of the loan or other relation; for it is the custom of business to pay interest at least as often as annually, and a loan running fifteen years (and loans on bonds commonly run longer) would normally have interest paid at least fifteen times during its life rather than at the end of the loan only. In order to compare the value of two investments, we must put them on a comparable basis. Money actively invested in business by a proprietor, or partner, or stockholder, is supposed to be earning income constantly, and that income may be realized (and is almost universally calculated and available for withdrawal) at least as often as annually. If we are to compare loans and other investments, we must put them all on a periodical-settlement basis. So all long-term financial relations, however payment is actually made, are valued on a basis of periodic settlement of interest. If the actual settlement of interest is seldom, they are less valuable, for the recipient of the interest will have to wait longer for his money and will therefore discount more heavily: if the settlement of interest is frequent, they are more valuable — for the interest payments may be themselves invested and earn more interest. Unless stipulation is made to the contrary, interest is supposed to be payable annually, and calculations are based on that assumption.

No interest can be calculated without a rate, and consequently when a future value is to be determined a rate must be fixed upon. The rate of interest is always dependent in part on the risk involved. To some people we would not lend for the promise of two hundred per cent. interest, but to others we might lend for five; for in some cases we should think the chance of losing even our principal was large. The first step in calculating a future value is fixing upon the rate to be used, called the "basis rate." That is not a matter of mathematics, or of accounting, but of business judgment with which accounting has nothing to do but to use the rate found.

We commonly have two classes of value to find: future values of future sums, and present values of future sums; these sums, moreover, whether present or future, may be single sums or a series of sums payable periodically, commonly called "annuities." We wish a means of

finding, then, four things: the future values of sums now in hand, supposing the value now in hand is invested and earns the normal rate of interest on investment of its class; the present value of sums to come to hand in the future but without interest payments in the meantime; the future value of sums to come to hand periodically in the future and put at interest; and the present value of sums to come to hand periodically in the future but without interest.

The first step is to realize that, since the normal operation of business yields return on investment in the form of profit or interest or dividends at least as often as annually (when return is made at all), in finding the value of long-term relations we usually assume that interest will normally be received annually. A sum of money in hand to-day, therefore, if kept invested at 6%, will grow in the following way: starting at \$1,000, in one year it will earn \$60, and the amount will be \$1,060; but the \$60 being invested will itself earn \$3.60, and the second year's interest will be \$63.60, which added to the \$1,060 at the end of the first year gives \$1,123.60 at the end of the second year; this whole sum (original sum and two interest sums) will be earning in the third year, and the interest will be \$67.42, so that the amount at the end of that year will be \$1,191.02. This process can be continued indefinitely. Each interest is added to the amount at the end of the preceding year, and a new interest is calculated and added. Those who have advanced somewhat in arithmetic know that this may be expressed in a formula. If  $P$  is the principal, or original sum, and  $p$  is the number of periods, and  $r$  is the rate of interest, the amount equals  $P(1+r)^p$ . In this case, our formula is  $1,000(1.06)^3$ .

This is the formula for the future value of a single present sum in hand to accumulate from interest. Calculations involving many periods are very tedious; but they may be simply and easily made by the use of logarithms and the formula just given; but logarithms lie beyond the field of this book.

Let us turn next to the present value of single sums to come to hand in the future. What is the value of a legacy of \$3,000 due to be paid in three years? We are concerned here not with bank discount, which takes out interest on more money than is lent, but with true discount. What is the value to-day of \$1,000 due in one year, if 6% is the basis rate? The real value is the sum which put at interest for one year at 6% will amount to \$1,000 in one year. This can be easily found. One dollar put at interest for one year at 6% will at the end of the year amount to \$1.06. If each dollar will in a year amount to \$1.06, the number of dollars which will in a year amount to \$1,000 is represented by the number of times \$1.06 is contained in \$1,000, or \$943.40. ( $\$1,000 \div 1.06 = \$943.40$ ). This is easily proved: 6% of \$943.40 is



\$56.60; and  $\$943.40 + \$56.60 = \$1,000$ . The true discount of  $\$1,000$  for one year at 6%, then, is  $\$1,000 - \$943.40$ , or  $\$56.60$ : the discount on the principal sum,  $\$1,000$ , is the same as the interest on the present worth. That is why bank discount is at a higher rate: it takes interest on the principal rather than on the present worth (which is all that has been lent).

What is the value to-day of  $\$1,000$  due in two years? It is not  $\$1,000$  minus twice the true discount for one year, or  $\$1,000 - \$113.20$ ; for that would neglect the fact that if interest were paid annually one could invest the interest of the first year and earn something with it in the second, and that the interest on what is big enough to amount to  $\$943.40$  at the end of a year is less than the interest on what will amount to  $\$1,000$  at the end of a year. The value of  $\$1,000$  payable in two years will be found by continuing one step farther the process used in finding the value for one year. We have found that if any one had  $\$943.40$  to-day, and invested it at 6%, he would be in the same condition at the end of the year as if he were to receive  $\$1,000$  then. We now wish to know how much he must have one year earlier than that, or two years before the  $\$1,000$  is due, to have  $\$943.40$  one year before the  $\$1,000$  is due. This is found, of course, by dividing  $\$943.40$  by 1.06, for the same reason that we divided  $\$1,000$  by 1.06 in the other case. This gives us  $\$890.00$ , and the discount for the second period before maturity is therefore  $\$53.40$ . This is easily proved:  $\$890.00$  in one year will earn  $\$53.40$ ; this added to  $\$890.00$  gives  $\$943.40$ ; this in the second year will earn  $\$56.60$ ; and at the end of two years we have  $\$1,000$ . Our discount for the two years is  $\$110$ , and the present worth for two years is  $\$890$  — that is, the value to-day of  $\$1,000$  payable in two years. For three years, we carry the process another step and divide  $\$890.00$  by 1.06, and get  $\$839.62$ . As this is the value of  $\$1,000$ , three times this is the value for  $\$3,000$ , which we started to find, or  $\$2,518.86$ . We should have got the same result, of course, by dividing  $\$3,000$  by 1.06, and the quotient by 1.06, and that quotient in turn by 1.06. If one prefers, however, one may approach from the other end, and make use of what we found regarding accumulations of interest. We have just seen that the present worth of any future sum is the principal which will amount to that sum in the given number of periods; and we found on the preceding page how to find what any principal will amount to in any number of periods. So now we may find the present worth of any sum by dividing it by the amount of one dollar for that number of periods. Those who desire a formula can construct one from that given for the other sort of case. Actually it is  $\frac{P}{(1+r)^p}$ , or, in this case,  $\frac{1000}{1.06^2}$ . This applies to any sort of future value. When the number of



periods is large, the calculation is very tedious except by the use of logarithms.

We may now turn to periodic payments. These are much more common than most people realize, and are called "annuities," whatever the periodicity. Any periodic fixed payment is an annuity — rent, salaries, interest, and insurance premiums, for example. The value of any annuity, whether present or future, is simply the sum of the values of the separate installments of which it is made up. The amount of an annuity of \$1,000 a year for three years, on a 6% basis (which assumes that all sums received are to be invested and accumulated by adding the interest), is the sum of the amounts of the first \$1,000 for three years (if the installments begin immediately), the amount of another \$1,000 for two years, and the amount of a third thousand for one year; or, as we found above, on page 419, \$1,191.02, for the first installment, \$1,123.60 for the second, and \$1,060 for the third, or \$3,374.62 for the annuity. If, on the other hand, the installments of annuity were paid at the end of the year, the first would earn interest only two years and amount to only \$1,123.60, the second for one year and amount to \$1,060, and the third would have no opportunity to earn interest, and the total amount would be only \$3,183.60. Formulas for the values of annuities can be constructed, and are published; but even to explain one of them here would carry us beyond our field.

The present worth of an annuity is merely the sum of the present worths of the various installments of the annuity. An annuity of \$1,000 a year for three years, on a 6% basis, therefore, is the sum of the present worth of \$1,000 payable in one year (supposing the annuity is first payable a year from now), of the present worth of another \$1,000 payable in two years, and of the present worth of a third \$1,000 payable in three years; or, as we found above, on page 420, \$943.40 for the first installment, \$890.00 for the second, and \$839.62 for the third, or a total of \$2,673.02 for the annuity. If, on the other hand, the first installment were payable at once the values would be \$1,000 for the first, \$943.30 for the second, and \$890.00 for the third, or a total of \$2,833.40 for the annuity. Formulas are available for calculating the present worth of annuities, but they would carry us too far from the field of this book.

One type of annuity is a sinking fund. A sinking fund is a sum of money set aside periodically and invested, along with the interest earned by the fund, in order to accumulate by a certain specified time a certain sum of money for a definite purpose, such as paying debt, or replacing worn-out machinery. The organizers of the fund need to know how much money to set aside periodically in order to build up the proper amount at the proper time. The method is simply to divide the required amount by the amount of an annuity of one dollar, for the re-

quired number of periods, and at the rate available. If, for illustration, we wish to know how much we must set aside annually to accumulate \$10,123.86 in three years at 6%, we divide that amount by 3.37462, the amount that an annuity of one dollar will amount to in three years (the amount shown on page 421 for \$1,000 — when payments begin at once — divided by 1,000) and get \$3,000.

When interest is assumed to be or is actually paid oftener than annually, the calculation in all these cases uses the adjusted rate for the adjusted number of periods. If interest is semi-annual rather than annual, we for every case above use 3% for six periods (interest or discount) instead of 6% for three periods — and the results are different because of the more frequent compounding.

For the convenience of the reader in seeing how these things work out, and in trying practice problems, tables for the four kinds of values just discussed are given on pages 424 and 425 for six periods and for eight rates of interest. It should be noted that the values are for the most common situation for each kind of case, and that the tables are not uniform in respect to time. The table of present worths gives the *present* value of a single dollar to be paid at the *end* of the period named. The table of amounts gives the accumulated amount at the *end* of the period named for a dollar in hand *now*. The tables for annuities, both present worth and amount, are for an annuity on which no payment is made until the *end* of the first period. To gain familiarity with the significance of the tables, the reader is recommended to observe: (1) that any figure in the table for present worth of a single payment when multiplied by the figure for the corresponding rate and period in the table for amounts will give \$1.00 (for this puts the present worth at interest to earn back the discount taken off); (2) that the present worth of an annuity for one period is the same as the present worth of a single payment for one period (for they are the same thing); (3) that the present worth of an annuity is the sum of the corresponding present worths of the installments of the annuity; (4) that the parallelism does not hold with the tables for amounts, for the table for single payments is for a present one dollar, whereas the table for annuities is for a dollar paid at the end of each period; (5) that as we go down the periods, the difference between each present worth and the next gets smaller, whereas the difference between each amount and the next gets larger; (6) that the present worth of any single payment is somewhat more than the present worth at half the rate for twice the number of periods (for discounting at 3% for 4 periods takes off more discount than discounting at 6% for 2 periods, because of more frequent compounding); (7) that the amount of any single payment is somewhat less than the amount at half the rate for twice the number



of periods (for here the extra compounding at the lower rate adds to the interest, whereas in the case of present worth it added to the discount); (8) that both the present worth and the amount for any annuity are less than the corresponding figure for any annuity of half the sum at half the rate for twice the number of periods; for with respect to the present worth, though compounding at shorter intervals with the lower rate tends to reduce values, the more frequent payment of installments reduces the sums remaining to be paid, and so reduces discounts faster than the more frequent compounding builds them up; and with respect to amounts, both the more frequent payments and the more frequent compounding add to values.

### QUESTIONS AND PROBLEMS

1. How from the tables should you prove or disprove each of the following statements?
  - (a) A sum of \$10,000 is due in five years, and interest at 6% is to be paid on it; but by agreement the interest will not be paid until maturity, when interest will be paid on the interest payments postponed. The amount to be paid at maturity is \$13,382.26.
  - (b) The present worth of \$5,000 payable in three years, on an interest basis of 5% in semi-annual installments, is \$4,311.48. Show this from two tables.
  - (c) You sell your right for two years to an annuity paying \$1,000 a half year, and deem 5% interest payable in two installments to be fair. The first installment of the annuity will be due in six months. You should get \$3,761.97. Prove this from two tables.
  - (d) I desire to accumulate \$3,173.90 by January 1, 1925. Supposing I can earn 4½% interest, paid in semi-annual installments, on all sums invested, I can accumulate the desired sum in due season if I invest \$500 on July 1, 1922, and a like sum semi-annually thereafter, and invest all interest received.
2.
  - (a) If money is worth 5% a year payable in semi-annual installments, what will be the amount of \$1,000, put at interest now and increased by the investment of the interest, in two years?
  - (b) What is the present worth of \$10,000 payable in four years when money is worth 6% annually?
  - (c) If you are the beneficiary of an estate which yields \$10,000 at the end of each year, and you each year on receiving the income promptly invest it, and thereafter invest promptly the interest received, and earn 4½% annually, how much will you have at the end of four years (with the \$10,000 due at that time)?
  - (d) If instead of collecting the income mentioned in (c) you sell it in advance, what should you get for it to-day, again supposing interest is worth 4½% annually?



TABLE OF PRESENT WORTHS OF \$1 PAYABLE AT THE END OF THE PERIODS NAMED

Period	2%	2½%	3%	4%	4½%	5%	6%
1	.98039216	.97799511	.97560976	.96153846	.95693780	.95238095	.94339623
2	.96116878	.95647444	.95181440	.92455621	.91572995	.90702948	.88999644
3	.94232233	.93542732	.92859941	.91514166	.87629660	.86383760	.83961928
4	.92384543	.91484335	.90595064	.88848705	.83856134	.82270247	.79209366
5	.90573081	.89471232	.88385429	.82192711	.80245105	.78352617	.74725817
6	.88797138	.87502427	.86229687	.79031453	.76789574	.74621540	.70496054

TABLE OF AMOUNTS OF A PRESENT \$1 AT THE END OF THE PERIODS NAMED

Period	2%	2½%	3%	4%	4½%	5%	6%
1	1.02	1.0225	1.025	1.04	1.045	1.05	1.06
2	1.0404	1.04550625	1.050625	1.0816	1.092025	1.1025	1.1236
3	1.061208	1.06903014	1.07689063	1.124864	1.14116613	1.157625	1.191016
4	1.08243216	1.09308332	1.10381289	1.16985856	1.19251860	1.21550625	1.26247696
5	1.10408080	1.11767769	1.13140821	1.21665290	1.24618194	1.27628156	1.33822558
6	1.12616242	1.14282544	1.15969342	1.26331902	1.30226012	1.34009564	1.41851911

TABLE OF ANNUITIES OF \$1 PAYABLE AT THE END OF THE PERIODS NAMED

PRESENT WORTHS

Period	2%	2½%	3%	4%	4½%	5%	6%
1	0.98039216	0.97799511	0.97560976	0.96153846	0.95603780	0.95238095	0.94339623
2	1.94156094	1.93446955	1.91346970	1.88609467	1.87266775	1.85941043	1.83339267
3	2.88388327	2.86989687	2.85602356	2.77509103	2.74896435	2.72324803	2.67301195
4	3.80772870	3.78474021	3.76197421	3.71709840	3.62989522	3.58752570	3.46510561
5	4.71345951	4.67945253	4.64582850	4.45182233	4.38997674	4.32047667	4.21236379
6	5.60143089	5.55447680	5.50812536	5.24213686	5.15787248	5.07569206	4.91732433

AMOUNTS

Period	2%	2½%	3%	4%	4½%	5%	6%
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	2.02	2.0225	2.03	2.04	2.045	2.05	2.06
3	3.0604	3.06800625	3.0909	3.1216	3.137025	3.1525	3.1836
4	4.121608	4.13703639	4.183627	4.246464	4.27819113	4.310125	4.374616
5	5.20404016	5.23011971	5.30013581	5.41632256	5.47070973	5.52563125	5.63709296
6	6.30812096	6.34779740	6.46840988	6.63297546	6.71689166	6.80191281	6.97531854

3. Each of the cases indicated below represents a sum or sums of money to be received in the future. What is the difference in present value between the sums when the interest named is to be taken as annual and when it is to be taken as in semi-annual installments?
- (a) \$1,000 due in three years, when money is worth 5%.
  - (b) \$1,000 due in two years, when money is worth  $4\frac{1}{2}\%$ .
  - (c) Interest on a 5% bond for \$10,000, to run two years, when money is worth 6%.
  - (d) The amount that can be accumulated in three years by investing at 4% the interest that is received on a \$10,000 6% bond with three years to run.



## APPENDIX D

### SINGLE ENTRY

THROUGHOUT this book double entry has been assumed as the only correct system of bookkeeping. The reason was explained in Chapter II. A few words about the single-entry system may be interesting, though they can serve little purpose except to emphasize the advantage of the other.

The fundamental distinction is that theoretically single entry has none but personal accounts. When a transaction involves two such accounts, the entry is necessarily double, a credit to one and a debit to the other. If, for instance, we owe Jones and pay him by an order on Smith who owes us, we must debit Jones and credit Smith. Theoretically, by single entry this would be made as two entries:

J. Jones	Dr.	2,500
Paid him by an order on J. Smith		
J. Smith	Cr.	2,500
By an order to pay J. Jones for our account		

In practice, however, these are often combined as in a double-entry journal, though the double form intervening between single forms is more or less dangerous, since the bookkeeper may not notice that here two postings are required.

It is not strictly in accordance with the single-entry theory to keep accounts with property, such as merchandise and cash, though it is customary to do so.

When expenditures are for such things as interest, expense, etc., the normal entry would be to disregard the nominal account entirely and simply credit cash. If, however, one wished to keep track of interest, an account could be kept with it, posting to it as under the other system. Just so far, however, the system would be double entry.

Under pure single entry, therefore, the situation is as follows: the books show all amounts owing and all amounts owed; the resources of other sorts may be counted or valued, as cash, notes, merchandise, etc. The difference between net resources and net liabilities is the present worth of the business — exactly as in the balance sheet by double entry. A comparison of this year's present worth with last year's present worth (allowing for any supposed profits withdrawn by proprietors or as dividends) shows profit for the year — just as a compari-

son of two balance sheets (with allowance for supposed profits withdrawn) shows profits under double entry.

So far as single entry goes, therefore, it attains the same result as double entry. We must note, however, what is missing. In Chapter XIV we saw that by a six-column statement we derive profits in two ways, and that the two ways actually show the same result. On such a statement we compare not only resources and liabilities, but also losses and gains. We know not only how much we have made and what it cost, but also from what sources we made it and how the cost was incurred. Single entry can do this, to be sure, by keeping extra accounts; but so far as it does so by single-entry methods double labor is involved. In double entry, as was shown in Chapter XI, the labor is not only not double, but practically single. Indeed, full double entry by double-entry methods is far less laborious than partial double entry by single-entry methods. Any books kept so that any entry fails to have a credit for its debit, or *vice versa*, is kept by single entry: as the strength of a chain is determined by the strength of its weakest link, the double-entry or single-entry character of books is determined by the character of its weakest entry, for with one single-entry record the books are no longer in balance and therefore no longer have the double aspect. Consequently the work cannot be checked by the double-entry tests — agreement of the two sides of the trial balance, agreement of the two showings of loss and gain on a six-column statement, and consistency between the balance sheet and the income sheet.

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